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95:246316

Polymer-supported tetranuclear bimetallic cluster catalysts.

Prizzantozzi, Ronald; McQuade, K. J.; Gates, B. C. (Cent. Catal. Sci.

Technol., Univ. Delaware, Newark, DE 19711, USA). Stud. Surf. Sci.

Catal., 7(Pt. B, New Horiz. Catal.), 941-52 (English) 1981. CODEN:

SSCTDM. ISSN: 0167-2991. DOCUMENT TYPE: Journal CA

Section: 67 (Catalysis and Reaction Kinetics)

Supported metal clusters with unique structures were prep'd. by phosphine-phosphine ligand exchange between the parent mol. metal clusters and phosphine-functionalized poly(styrene-divinylbenzene). The polymers incorporating clusters with open butterfly framework structures ($[\text{ClAuOs}_3(\text{CO})_{10}(\text{Ph}_2\text{P-polymer})]$ and $[\text{Co}_2\text{Pt}_2(\text{CO})_8(\text{Ph}_2\text{P-polymer})_2]$) were active catalysts for ethylene hydrogenation at 1 atm and temps. $\leq 100^\circ$, whereas polymers incorporating clusters with closed tetrahedral framework structures ($[\text{HauOs}_3(\text{CO})_{10}(\text{Ph}_2\text{P-polymer})]$ and $[\text{H}_2\text{PtOs}_3(\text{CO})_{10}(\text{Ph}_2\text{P-polymer})_2]$) had immeasurably low activity. The former metal clusters themselves provided the catalytic sites by virtue of their coordinative unsatn., whereas metal-metal, or metal-ligand bond cleavage would be required for catalytic activity of the clusters with closed tetrahedral frameworks.

Keywords

bimetallic cluster catalyst polymer immobilized
tetranuclear bimetallic cluster catalyst hydrogenation
gold osmium tetranuclear cluster catalyst
phosphine linked polymer supported catalyst
butterfly open framework cluster catalyst
selectivity open framework cluster catalyst
cobalt platinum cluster polymer catalyst
carbonyl tetranuclear cluster catalyst

Index Entries

Polymers, uses and miscellaneous
catalyst supports, for tetranuclear bimetallic clusters
Alkenes, reactions
hydrogenation of, on polymer-immobilized tetranuclear bimetallic cluster catalyst
Kinetics of hydrogenation
of ethylene, on tetranuclear bimetallic clusters immobilized on polymer supports
Infrared spectra
of tetranuclear bimetallic clusters, immobilized on polymer supports
Hydrogenation catalysts
tetranuclear bimetallic clusters, immobilized on polymer supports
Catalysts and Catalysis
tetranuclear bimetallic clusters, polymer-immobilized
Transition metals, compounds
tetranuclear bimetallic clusters, polymer-immobilized, as hydrogenation catalysts
Molecular structure-property relationship
catalytic, of tetranuclear bimetallic clusters immobilized on polymer supports
Bond
metal-metal, in tetranuclear bimetallic clusters immobilized on polymer supports
Cluster compounds
transition metal, immobilized on polymer supports, as hydrogenation catalysts
Carbonyls
transition metal, tetranuclear bimetallic, polymer-immobilized

catalyst
 39311-03-0, phosphene-functionalized
 catalyst supports from crosslinked, for transition metal tetranuclear
 bimetallic clusters
 31390-55-3
 56591-77-6
 68091-57-6
 80052-17-1
 catalysts, polymer-immobilized, for hydrogenation
 74-85-1, reactions
 hydrogenation of, on polymer-immobilized tetranuclear bimetallic
 cluster catalyst

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95:13427

Triphase catalysis. Influence of percent ring substitution on active-site
 mobility, macroenvironment, microenvironment, and efficiency.

Ohtani, Noritaka; Wilkie, Charles A.; Nigam, Alok; Regen, Steven L.
 (Dep. Chem., Marquette Univ., Milwaukee, WI 53233, USA).

Macromolecules, 14(3), 516-20 (English) 1981. CODEN: MAMOBX.

ISSN: 0024-9297. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis and Reaction Kinetics) Section cross-reference(s): 22, 35,
 66

Microporous cross-linked polystyrenes (1% divinylbenzene) bearing
 methylene-tri-n-butylphosphonium chloride (1a, 17% ring substitution
 (prs); 1b, 52 prs) or mesylate groups (2a, 17 prs; 2b, 52 prs) were
 examd. by ¹³C NMR spectroscopy under triphase conditions. Pendant
 group mobility was high in 1a and 2a and was insensitive to the concn.
 of NaCl in the exterior aq. layer; for 1b and 2b the mobility remained
 high but was inversely related to the salt concn. These results closely
 correlate with anal. made of the imbibed solvents; both show that (1) 1b
 is phys. responsive to changes in the salt concn. used whereas 1a is
 not, (2) 1a responds well to org. solvents and is insensitive to water,
 while the reverse is true for 1b, and (3) when satd. NaCl solns. are
 used, pendant group mobility and polymer swelling are max. under
 triphase conditions. Resins 1a and 1b were also evaluated as triphase
 catalysts for chloride ion displacement on n-decyl methanesulfonate
 and for alkylation of b-naphthoxide by benzyl bromide. Over a wide
 range of salt concns., the amt. of imbibed water in 1a was low and
 nearly const.; its activity for chloride ion displacement was high and,
 within exptl. error, const. For 1b, an increase in the salt concn.
 substantially decreased the water uptake and raised its activity.
 Whereas 1a led to predominant O-alkylation of b-naphthoxide, 1b
 afforded mostly C-alkylation.

Keywords

triphas catalysis ring substitution effect
 polystyrene crosslinked triphase catalyst
 methylenetriethylphosphonium chloride immobilized triphase catalyst
 mesylate group immobilized triphase catalyst
 pendant group mobility polystyrene immobilized catalyst
 solvent imbibed polystyrene immobilized catalyst
 swelling mobility polystyrene immobilized catalyst
 alkylation catalyst immobilized naphthoxide
 decyl methanesulfonate chloride displacement catalyst

Index Entries

Swelling, physical
 of polystyrene immobilized catalysts, in aq. sodium chloride or
 toluene
 Polymers, uses and miscellaneous
 triphase catalysts

Alkylation catalysts
 Catalysts and Catalysis
 triphase, polystyrene-immobilized, ring substitution effects on
 activity of
 Substitution reaction catalysts
 nucleophilic, triphase, polystyrene-immobilized, ring substitution
 effects on activity of
 100-39-0
 alkylation by, of naphthoxide in presence of triphase catalysts
 15147-55-4, reactions
 alkylation of, in presence of polystyrene-immobilized triphase
 catalyst
 42808-25-3
 77121-69-8
 catalysts, triphase, ring substitution effects on activity of
 41233-29-8
 substitution reaction of, by chloride in presence of triphase
 polystyrene-immobilized catalyst
 7782-50-5, uses and miscellaneous
 substitution reaction of, on decylmethanesulfonate in presence of
 polystyrene-immobilized triphase catalyst
 7647-14-5, uses and miscellaneous
 swelling in aq., of polystyrene-immobilized triphase catalysts
 108-88-3, uses and miscellaneous
 swelling in, of polystyrene-immobilized triphase catalyst

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92:136004

Catalytic reactions promoted by homogeneous catalysts attached to
 polystyrene matrixes.
 Pittman, C. U., Jr.; Quoc Ng; Hirao, Akir; Honnick, W.; Hanes, R. (Dep.
 Chem., Univ. Alabama, University, AL 35486, USA). Colloq. Int. C. N.
 R. S., Volume Date 1977, 281(Relat. Catal. Homogene Catal.
 Heterogene), 49-100 (English) 1978. CODEN: COINAV. ISSN:
 0366-7634. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis
 and Reaction Kinetics)
 Styrene-divinylbenzene resins were functionalized with phosphine deriv.
 ligands and these phosphinated resins used to immobilize Rh(I), Ir(I),
 and Pd(0) catalysts. The selectivity of Rh(I)-catalyzed hydroformylations
 and the optical yields in styrene hydroformylations were examd. as a
 function of ligand loading and P/Rh ratios. The rates of Ir(I)-catalyzed
 hydrogenation of 1,5-cyclooctadiene and Pd(0)-catalyzed butadiene
 dimerization-methoxylations were studied. In all cases the
 resin-catalyzed reactions were compared to their homogeneously
 catalyzed analogs. The results were explained by the influence of the
 resin matrix on metal-ligand equil. which are important in the reaction
 mechanisms.

Keywords

polystyrene immobilized homogeneous metal catalyst
 iridium catalyst immobilized polystyrene
 rhodium catalyst immobilized polystyrene
 palladium catalyst immobilized polystyrene
 hydroformylation catalyst rhodium immobilized polystyrene
 hydrogenation catalyst iridium immobilized polystyrene
 dimerization catalyst palladium immobilized polystyrene
 phosphinated polystyrene immobilized metal catalyst

Index Entries

Hydrogenation catalysts
 iridium, bound to styrene copolymers with phosphine ligands
 Catalysts and Catalysis

methyls, attached to polystyrene matrixes
 Dimerization catalysts
 Methylenation catalysts
 palladium, bound to styrene copolymers with phosphide ligands
 Hydroformylation catalysts
 rhodium, bound to styrene copolymers with phosphine ligands
 7439-88-5, uses and miscellaneous
 7440-05-3, uses and miscellaneous
 7440-16-6, uses and miscellaneous
 catalysts, attached to polystyrene matrixes
 106-99-0, reactions
 dimerization-methoxylation of, with palladium catalysts
 22569-71-7, derivs.
 divinylbenzene-styrene polymers modified by, metal catalysts
 attached to
 100-42-5, reactions
 hydroformylation of, with rhodium catalysts
 111-78-4
 hydrogenation of, with iridium catalysts
 9003-70-7, phosphanated
 metal catalysts of homogeneous type attached to

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92:6206

Crown ether immobilized on silochrome - a new heterogeneous
 catalyst.
 Bogatskii, A. V.; Luk'yanenko, N. G.; Pastushok, V. N. (Fiz.-Khim. Inst.,
 Odessa, USSR). Dokl. Akad. Nauk SSSR, 247(5), 1153-4 [Chem.]
 (Russian) 1979. CODEN: DANKAS. ISSN: 0002-3264. DOCUMENT
 TYPE: Journal CA Section: 25 (Noncondensed Aromatic Compounds)
 Section cross-reference(s): 23, 28, 67
 Crown ether I immobilized on silochrome S-120 was an effective
 phase-transfer catalyst, and catalyzed the nucleophilic substitution of
 RBr (R = Bu, PhCH₂) with KOAc to 100% ROAc.

Keywords

crown ether silochrome substitution catalyst
 phase transfer catalyst substitution
 butyl bromide substitution catalyst
 benzyl bromide substitution catalyst
 acetate butyl benzyl
 bromide butyl benzyl substitution catalyst

Index Entries

Substitution reaction catalysts
 silochrome-immobilized crown ether, for Bu or benzyl bromide
 with potassium acetate
 Catalysts and Catalysis
 phase-transfer, crown ether immobilized on silochrome S-120
 31406-52-7, immobilized on silochrome S-120
 phase-transfer catalyst, for substitution reactions of Bu and benzyl
 bromide
 123-86-4
 prepn. of, by nucleophilic substitution reaction of Bu bromide with
 potassium acetate, phase-transfer catalyst for
 140-11-4
 prepn. of, by nucleophilic substitution reaction of, benzyl bromide
 with potassium acetate, phase-transfer catalyst for
 127-08-2
 substitution reaction of, with Bu or benzyl bromide, phase-transfer
 catalyst for
 100-39-0

109-65-9

substitution reaction of, with potassium acetate, phase-transfer catalyst for

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91:174280

Hydrogen bond assisted reactions: C- and O-alkylations, sulfenylations, and Michael additions aided by polymer immobilized fluoride ion.

Miller, Jack M.; Cater, Stephen R.; So, Kwok-Hung; Clark, James H. (Chem. Dep., Brock Univ., St. Catharines, ON L2S 3A1, Can.). Can. J. Chem., 57(19), 2629-32 (English) 1979. CODEN: CJCHAG. ISSN: 0008-4042. DOCUMENT TYPE: Journal CA Section: 21 (General Organic Chemistry)

The title reactions were carried out on fluoride forms of strongly basic anion exchange resins. Dowex MSA-1 F- is the preferred resin for Michael addns. and sulfenylations, while C-alkylation is best carried out on Amberlites A-26 F- and A-27 F-. The preferred solvent is THF or DMF. Regenerated resins give noticeably lower product yields.

Keywords

alkylation catalyst immobilized fluoride
sulfenylation catalyst immobilized fluoride
Michael catalyst immobilized fluoride

Index Entries

Alkylation catalysts
Michael condensation
polymer immobilized fluoride ion as
Substitution reaction catalysts
sulfenylation, polymer immobilized fluoride ion as
9050-97-9, fluoride
9074-22-0, fluoride
39339-85-0, fluoride
53125-38-5, fluoride
catalysts, for alkylation, sulfenylation and Michael addn. reactions
16984-48-8, uses and miscellaneous
polymer immobilized, catalysts, for alkylation, sulfenylation and Michael addn. reactions
78-94-4, reactions
sulfenylation of, on polymer immobilized fluoride ion
108-98-5, reactions
882-33-7
sulfenylation reaction of, with acetoacetone, on polymer immobilized fluoride ion
123-54-6, reactions
C-methylation or sulfenylation of, on polymer immobilized fluoride ion
100-02-7, reactions
108-95-2, reactions
O-methylation of, on polymer immobilized fluoride ion

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90:5862

Hydrogen bond assisted organic reactions: C- and O-alkylations, sulfenylations, and Michael additions aided by polymer immobilized fluoride ion.

Miller, Jack M.; So, Kwok-Hung; Clark, James H. (Dep. Chem., Brock Univ., St. Catharines, Ont., Can.). J. Chem. Soc., Chem. Commun., (11), 466-7 (English) 1978. CODEN: JCCCAT. ISSN: 0022-4936. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds)

Section cross-reference(s): 25

H bond assisted C-alkylation and sulfenylation of (MeCO)₂CH₂, Michael addn. reaction of MeCOCH:CH₂ with PhSH, and O-alkylation of phenols were performed using F⁻ immobilized on strongly basic anion exchange resins. E.g., (MeCO)₂CH₂ with MeI in THF at 20° underwent c-alkylation in the presence of amberlyst A26 and A27 (F⁻ form) to give 60-70% (MeCO)₂CHMe.

Keywords

alkylation immobilized fluoride assisted
sulfenylation immobilized fluoride assisted
Michael addn immobilized fluoride assisted
immobilized fluoride assisted alkylation sulfenylation
acetylacetone alkylation immobilized fluoride
phenol alkylation immobilized fluoride

Index Entries

Michael condensation catalysts
immobilized fluoride ion, for Me vinyl ketone with thiophenol
Alkylation catalysts
immobilized fluoride ion, for acetylacetone and phenols
Substitution reaction catalysts
sulfenylation, immobilized fluoride ion, for acetylacetone
78-94-4, reactions
Michael addn. reaction of, with thiophenol, immobilized fluoride ion assisted
9074-22-0
39339-85-0
53125-38-5
catalyst, for alkenylation, sulfenylation, and Michael addn. reactions
100-17-4
100-66-3, preparation
815-57-6
6110-01-6
22805-23-8
prepn. of
123-54-6, reactions
C-alkylation and sulfenylation of, immobilized fluoride ion assisted.
100-02-7, reactions
108-95-2, reactions
O-alkylation of, immobilized fluoride ion assisted

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95:151137

Peptide synthesis by means of immobilized enzymes. I.

Immobilized a-chymotrypsin.

Koennecke, Andreas; Bullerjahn, Ralf; Jakubke, Hans-Dieter (Sekt. Biowiss., Karl-Marx-Univ., Leipzig DDR-701, Ger. Dem. Rep.).

Monatsh. Chem., 112(4), 469-81 (English) 1981. CODEN: MOCMB7.

ISSN: 0026-9247. DOCUMENT TYPE: Journal CA Section: 34

(Synthesis of Amino Acids, Peptides, and Proteins) Section

cross-reference(s): 7

a-Chymotrypsin covalently bound to silica, enzacryl AA, an enzacryl AH catalyzed peptide bond formation between N-protected dipeptide Me esters and H-Leu-NH₂ with results similar to those with the free enzyme.

The influences of water-miscible and water-immiscible cosolvents, the supports, and the structure of the substrates were of importance for the ease of the chymotrypsin-mediated coupling reactions. The best yields were obtained using biphasic aq.-org. solvent mixts., silica-bound chymotrypsin, and substrates with leucine in the P₂-position. The yields are discussed in terms of the reactivity of substrates with similar

structure in enzymic hydrolyses. All the immobilized chymotrypsin preps. could be re-utilized successfully for further couplings.

Keywords

peptide synthesis immobilized chymotrypsin
enzyme immobilized peptide synthesis

Index Entries

Enzymes

peptide coupling of N-protected dipeptide Me esters with leucinamide in the presence of immobilized

Peptides, preparation

prepn. of, by peptide coupling of N-protected dipeptide Me esters with leucinamide, immobilized chymotrypsin of catalysts for

Peptides, reactions

di-, peptide coupling of, with leucinamide, immobilized chymotrypsin as catalyst for

2666-93-5

7517-19-3

amidation of

9004-07-3, immobilized

catalysts, for peptide coupling of N-protected dipeptide Me esters with leucinamide

37265-17-1

55965-12-3

7631-86-9, uses and miscellaneous

chymotrypsin immobilized on, for peptide coupling of N-protected dipeptide Me esters with leucinamide

7524-50-7

neutralization of

2577-90-4

peptide coupling of, with choline deriv.

1148-11-4

peptide coupling of, with phenylalanine Me ester

6461-07-0

prepn. and acetylation of

2541-25-5

3235-14-1

4817-95-2

4818-00-2

5874-73-7

6206-42-4

23631-72-3

38155-10-1

prepn. and immobilized chymotrypsin-catalyzed peptide coupling reaction of, with leucinamide

687-51-4

10466-61-2

prepn. and immobilized chymotrypsin-catalyzed peptide coupling reaction of, with N-protected dipeptide Me esters

4892-10-8

prepn. of

65118-56-1

69193-15-3

75286-43-0

75286-44-1

79259-43-1

79259-44-2

79262-32-1

79262-33-2

prepn. of, by peptide coupling of N-protected dipeptide Me esters with leucinamide, immobilized chymotrypsin of catalysts

for

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95:81604

Gel-immobilized metal-complex catalytic systems. Report 2.

Polymerization of ethylene.

Kabanov, V. A.; Ivanchev, S. S.; Smetanyuk, V. I.; Popov, V. G.;
Martynova, M. A.; Prudnikov, A. I.; Ul'yanova, M. V.; Baulin, A. A.;
Kopylov, V. M. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, USSR).
Deposited Doc., VINITI 2291-80, 37 pp. Avail. VINITI (Russian) 1980.

DOCUMENT TYPE: Report CA Section: 35 (Synthetic High Polymers)

Gel-immobilized Ziegler-Natta catalysts, prepd. by grafting EPDM
rubber with functional monomers and complexing with Ti or V compds.,
are capable of polymg. ethylene at a const. rate over prolonged periods
of time. When the polymn. occurs at above the m.p. of polyethylene (I)
[9002-88-4], it is truly continuous; operation at below the I m.p. requires
occasional suspension of the reaction while polymer is extd. from the
catalyst gel, but polymn. can be resumed at the previous rate. An
organoaluminum cocatalyst is used at Al-Ti (or Al-V) molar ratio ~10. I
is produced free from catalyst residues.

Keywords

ethylene polymn gel immobilized catalyst
titanium polymn catalyst gel immobilized
vanadium polymn catalyst gel immobilized

Index Entries

Dimerization catalysts

gel-immobilized nickel compds., for ethylene

Polymerization catalysts

gel-immobilized titanium and vanadium compds., for ethylene

Rubber, synthetic

EPDM, functionally grafted, carriers, for ethylene polymn. catalysts

3264-82-2

7718-54-9, uses and miscellaneous

gel-immobilized, catalysts, for dimerization of ethylene

1271-19-8

1686-22-2

7550-45-0, uses and miscellaneous

7632-51-1

14986-47-1

gel-immobilized, catalysts, for polymn. of ethylene

9002-88-4

prepn. of, gel-immobilized catalysts for

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95:43773

Chemistry and catalytic properties of complex catalysts immobilized
on macromolecular supports in polymerization processes.

D'yachkovskii, F. S.; Pomogailo, A. D. (USSR). Katalit. Reaktsii v
Zhidk. Faze. Materialy 5-i Vses. Konf. po Katalit. Reaktsii v Zhidk.
Faze, Alma-Ata, 1978., Alma-Ata, 231-48 From: Ref. Zh., Khim. 1981,
Abstr. No. 10S187(Russian) 1980. DOCUMENT TYPE: Journal CA

Section: 35 (Synthetic High Polymers)

Title only translated.

Keywords

catalyst polymn immobilized
macromol support immobilized catalyst

Index Entries

Polymers, uses and miscellaneous
 catalyst supports, for transition metal compds., for polymn. of
 unsatd. monomers
 Transition metals, compounds
 catalysts, immobilized on polymer support, for polymn. of unsatd.
 monomers
 Vinyl compounds, polymers
 polymers, prepn. of, transition metal catalysts immobilized on
 polymer support for
 Polymerization catalysts
 transition metal compds., immobilized on polymer support, for
 unsatd. monomers
 Unsaturated compounds
 dienes, polymn. of, transition metal catalysts immobilized on
 polymer support for
 74-86-2, derivs.
 polymn. of, transition metal catalysts immobilized on polymer
 support for
 9002-88-4
 prepn. of, transition metal catalysts immobilized on polymer
 support for

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94:192707

Dipeptides by coupling an N-substituted aspartic acid with
 phenylalanine lower alkyl esters.
 Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto;
 Kihara, Keiichi (Sagami Chemical Research Center; Ajinomoto Co.,
 Inc.; Toyo Soda Mfg. Co., Ltd., Japan). Ger. Offen. DE 3012693 16
 Oct 1980, 30 pp. (German). (Germany). CODEN: GWXXBX. CLASS:
 IC: C07C103-52; C07C102-04. PRIORITY: JP 79-40170 3 Apr 1979.
 DOCUMENT TYPE: Patent CA Section: 34 (Synthesis of Amino Acids,
 Peptides, and Proteins) Section cross-reference(s): 7
 N-Substituted aspartic acid derivs. were coupled with phenylalanine
 alkyl esters by an immobilized metalloproteinase to give the
 corresponding dipeptides. Thus, Z-Asp-OH (Z = PhCH₂O₂C) was
 coupled to H-Phe-OMe by immobilized thermoase to give 72.3%
 Z-Asp-Phe-OMe.

Keywords

aspartate phenylalanine dipeptide
 metalloproteinase peptide coupling aspartate phenylalanine
 proteinase peptide coupling aspartate phenylalanine
 enzyme peptide coupling aspartate phenylalanine

Index Entries

Catalysts and Catalysis
 Coupling reaction catalysts
 immobilized metallo-proteinase, for peptide coupling reaction of
 aspartic acid derivs. with phenylalanine alkyl esters
 Enzymes
 immobilized, catalyst, for peptide coupling reaction of aspartic
 acid derivs. with phenylalanine alkyl esters
 Peptides, preparation
 di-, aspartate- and phenylalanine-contg., prepn. of, by immobilized
 enzyme-catalyzed peptide coupling reaction
 9001-92-7, metallo, immobilized
 9014-01-1, immobilized
 catalyst, for peptide coupling reaction of aspartic acid derivs. with
 phenylalanine alkyl esters

2577-90-4
 15028-44-1
 peptide coupling of, with aspartic acid deriv., immobilized enzyme
 as catalyst for
 1152-61-0
 13726-67-5
 20890-95-3
 peptide coupling of, with phenylalanine Me ester, immobilized
 enzyme as catalyst for
 33605-72-0
 40944-73-8
 68802-03-9
 prepn. of, by immobilized enzyme-catalyzed peptide coupling
 reaction

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94:37013
 Synthesis, study of the structure, and catalytic properties of palladium
 complexes fixed on the surface of carbon-chain polymers.
 Klyuev, M. B.; Pomogailo, A. D.; Khidekel, M. L. (USSR). Katalizatory,
 Soderzhashch. Nanesen. Kompleksy. Materialy Simpoz., Tashkent,
 1980, Novosibirsk, (Ch. 1), 131-4 From: Ref. Zh., Khim. 1980, Abstr.
 No. 22B1218(Russian) 1980. DOCUMENT TYPE: Journal CA
 Section: 67 (Catalysis and Reaction Kinetics) Section
 cross-reference(s): 22, 35
 Title only translated.

Keywords

palladium immobilized catalyst structure

Index Entries

Aldehydes, reactions
 hydrogenation and amination of, by reaction with nitrobenzene in
 presence of palladium immobilized catalyst
 Amination catalysts
 Hydrogenation catalysts
 palladium immobilized complexes
 Polymerization catalysts
 palladium immobilized complexes, for phenylacetylene
 7440-05-3, uses and miscellaneous
 catalysts, immobilized
 9003-01-4
 25232-41-1
 catalysts, palladium complexes immobilized on
 536-74-3
 polymn. of, on palladium immobilized catalyst
 98-95-3, reactions
 reaction of, with aldehydes in presence of palladium immobilized
 catalyst

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93:239966
 Gel-immobilized metal-complex catalysts.
 Kabanov, V. A.; Smetanyuk, V. I. (Inst. Petrochem. Synth., Moscow,
 USSR). Sov. Sci. Rev., Sect. B, 2, 83-138 (English) 1980. CODEN:
 SSRDN. ISSN: 0143-0408. DOCUMENT TYPE: Journal; General
 Review CA Section: 35 (Synthetic High Polymers)
 A review with 17 refs. of gel-immobilized metal-complex catalysts for
 the polymn. of ethylene and the dimerization of ethylene and propylene.

Keywords

review gel immobilized polymn catalyst
 metal complex catalyst review
 polyolefin catalyst gel immobilized review
 dimerization catalyst gel immobilized review
 ethylene polymn catalyst review
 propylene dimerization catalyst review

Index Entries

Dimerization catalysts
 Polymerization catalysts
 metal complexes, gel-immobilized, for olefins
 Colloids
 gels, metal-complex catalysts immobilized in, for olefin polymn.
 9002-88-4
 16482-32-9
 16813-72-2
 prepn. of, catalysts for

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94:8195

Immobilized catalyst for hydrosilylation.
 Skvortsov, N. K.; Filippov, N. A.; Erokhina, L. L.; Pron, N. P.; Brovko, V. S.; Nikitin, A. V.; Zaslavskaya, T. N.; Reikhsfel'd, V. O. (Leningrad Technological Institute, USSR). U.S.S.R. SU 743717 30 Jun 1980
 From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1980, (24), 27. (Russian). (Union of Soviet Socialist Republics). CODEN: URXXAF. CLASS: IC: B01J037-02; B01J023-42. APPLICATION: SU 77-2552125 7 Dec 1977. DOCUMENT TYPE: Patent CA Section: 67 (Catalysis and Reaction Kinetics) Section cross-reference(s): 29
 A catalyst with increased life is produced by treating a SiO₂ support with (g-methyldichlorosilylpropyl)triphenylphosphonium bromide or g-bromopropylmethyldichlorosilane (I) with subsequent platinizing and drying of the catalyst material. If the support is treated with I, the support is also treated with Et₃N or Ph₃P.

Keywords

hydrosilylation catalyst heterogeneous
 phosphonium silica hydrosilylation catalyst
 silylpropylphosphonium hydrosilylation catalyst
 platinum hydrosilylation catalyst
 silane hydrosilylation catalyst
 amine silane hydrosilylation catalyst
 amine silane hydrosilylation catalyst
 phosphine silane hydrosilylation catalyst

Index Entries

Hydrosilylation catalysts
 long-lived heterogeneous, manuf. of
 7440-06-4, uses and miscellaneous
 catalysts, for hydrosilylation, modified silica supports for
 121-44-8, uses and miscellaneous
 603-35-0, uses and miscellaneous
 silica treatment with silane deriv. and, in hydrosilylation catalyst support manuf.
 18209-82-0
 75763-43-8
 silica treatment with, in manuf. of heterogeneous hydrosilylation catalysts

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95:219566

Catalytic dehydrogenation of 2-propanol by dinuclear rhodium(II) complex immobilized on a chemically modified silica surface. Shinoda, Sumio; Kojima, Takashi; Saito, Yasukazu (Inst. Ind. Sci., Univ. Tokyo, Tokyo 106, Japan). Stud. Surf. Sci. Catal., 7(Pt. B, New Horiz. Catal.), 1504-5 (English) 1981. CODEN: SSCTDM. ISSN: 0167-2991. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry)
Rh₂(OAc)₄, immobilized on Ph₂P-modified silica surface, catalyzes the dehydrogenation of Me₂CHOH. A higher initial reaction rate and a lack of induction period was obsd. with the supported catalyst. The results were interpreted in terms of the immobility and high local concn. of surface ligands.

Keywords

dehydrogenation propanol rhodium support
silica rhodium dehydrogenation catalyst

Index Entries

Kinetics of dehydrogenation
of propanol on rhodium immobilized on modified silica
Dehydrogenation
of propanol over rhodium immobilized on modified silica,
mechanism of
Dehydrogenation catalysts
rhodium complex immobilized on phosphine-modified silica, for
propanol
15956-28-2
catalyst immobilized on phosphine-modified silica, for
dehydrogenation of propanol
67-63-0, reactions
dehydrogenation of, on immobilized rhodium catalyst, kinetics
and mechanism of
7631-86-9, diphenylphosphine-modified
immobilization of rhodium catalyst by, for dehydrogenation of
propanol

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95:80001

Gel-immobilized metal-complex catalytic systems. Report 4. Codimerization of the lowest olefins. Vaizi, Z. S.; Prudnikov, A. I.; Lunin, A. F.; Ignatov, V. M.; Smetanyuk, V. I. (Inst. Neftekhim. im. Topchieva, Moscow, USSR). Deposited Doc., VINITI 2293-80, 18 pp. Avail. VINITI (Russian) 1980. DOCUMENT TYPE: Report CA Section: 23 (Aliphatic Compounds)
An extensive series of runs, over a wide range of conditions, for codimerization of C₂H₄ and C₃H₆ over polymer [poly(vinylpyridine)] gel-immobilized Ni acetylacetonate-alkylchloroaluminums (esp. EtAlCl₂ or Et₂AlCl) was carried out and analyzed via regression equations.

Keywords

alkene codimerization catalyst
ethene propene codimerization catalyst
propene ethene codimerization catalyst

Index Entries

Optimization
of codimerization of ethene with propene in presence of polymer
gel-immobilized catalysts

Dimerization catalysts
 co-, nickel acetylacetonate-alkyl chloroaluminums, polymer
 gel-immobilized, for ethene with propene
 115-07-1, reactions
 codimerization of, with ethene, polymer gel-immobilized catalysts
 for
 74-85-1, reactions
 codimerization of, with propene, polymer gel-immobilized
 catalysts for
 96-10-6, uses and miscellaneous
 563-43-9, uses and miscellaneous
 1779-25-5
 3264-82-2
 polymer gel-immobilized catalysts contg., for codimerization of
 ethene and propene
 25377-72-4
 prepn. of, by codimerization of ethene with propene, polymer
 gel-immobilized catalysts for

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95:80000

Gel-immobilized metal-complex catalytic systems. Report 3.
 Dimerization of the lowest olefins.
 Kabanov, V. A.; Smetanyuk, V. I.; Pluzhnov, S. K.; Martynova, M. A.;
 Chediya, R. V.; Prudnikov, A. I.; Komarova, O. P. (Inst. Neftekhim. Sint.
 im. Topchieva, Moscow, USSR). Deposited Doc., VINITI 2292-80, 37
 pp. Avail. VINITI (Russian) 1980. DOCUMENT TYPE: Report CA
 Section: 23 (Aliphatic Compounds)
 Polymer gel-immobilized catalysts contg. a Ni compd. (chloride, nitrate,
 naphthenate, acetylacetonate) and an alkylaluminum halide (EtAlCl_2
 and/or Et_2AlCl) were stable and effective for dimerization (or
 codimerization) of C_2H_4 and C_3H_6 . Data were given for a large no. of
 runs over a wide range of conditions.

Keywords

alkene dimerization catalyst
 ethylene dimerization catalyst
 propene dimerization catalyst

Index Entries

Alkenes, reactions
 dimerization of, gel-immobilized catalysts for
 Dimerization catalysts
 gel-immobilized, fluoroethylaluminums-nickel salts, for lower
 alkenes
 Naphthenic acids, uses and miscellaneous
 nickel salts, gel-immobilized catalysts contg., for dimerization of
 lower alkenes
 Optimization
 of dimerization of lower alkenes over gel-immobilized catalysts
 74-85-1, reactions
 115-07-1, reactions
 dimerization of, gel-immobilized catalysts for
 37211-05-5
 96-10-6, uses and miscellaneous
 563-43-9, uses and miscellaneous
 3264-82-2
 13138-45-9
 gel-immobilized catalysts contg., for dimerization of lower alkenes
 25377-72-4
 prepn. of, from ethene and propene by codimerization, catalysts for
 25167-67-3

prepn. of, from ethylene by dimerization, catalysts for
25264-93-1
prepn. of, from propene by dimerization, catalysts for

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95:68755

Chitin- and chitosan-based immobilized metal catalysts.
Arena, Blaise J. (UOP Inc. , USA). U.S. US 4274980 23 Jun 1981, 3
pp. (English). (United States of America). CODEN: USXXAM.
CLASS: IC: B01J031-02. NCL: 252430000. APPLICATION: US
79-83926 791011. DOCUMENT TYPE: Patent CA Section: 67
(Catalysis and Reaction Kinetics)
Chitin or chitosan powders, flakes, or granules are contacted with aq.
solns. of metal salts (esp. Group VIII metals) and the adsorbed metal
ions can then be reduced (e.g. with H₂ or a soln. of reducing sugar) to
give a dispersed metal catalyst for processes such as hydrogenation,
isomerization, or oxidn. Examples of prep. of Pd-impregnated
chitosan or chitin and of Pt-impregnated chitin for hydrogenation or
isomerization of alkenes are described.

Keywords

chitin support metal catalyst
chitosan support metal catalyst
palladium chitosan hydrogenation catalyst
platinum chitin hydrogenation catalyst
hydrogenation catalyst alkene chitin support
isomerization catalyst alkene chitin support

Index Entries

Group VIII elements
catalyst, chitin or chitosan supports for
Alkenes, reactions
hydrogenation or isomerization of, on metal-chitin or -chitosan
catalysts
Hydrogenation catalysts
Isomerization catalysts
palladium and platinum, on chitin or chitosan supports for alkenes
Catalysts and Catalysis
supports, chitin or chitosan as
1398-61-4
9012-76-4
catalyst support
7440-05-3, uses and miscellaneous
7440-06-4, uses and miscellaneous
catalyst, chitin or chitosan supports for

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95:51407

Application of immobilized hydrogenase for the detritiation of water.
Klibanov, Alexander M.; Huber, Jonathan (Dep. Nutr. Food Sci.,
Massachusetts Inst. Technol., Cambridge, MA 02139, USA).
Biotechnol. Bioeng., 23(7), 1537-51 (English) 1981. CODEN: BIBIAU.
ISSN: 0006-3592. DOCUMENT TYPE: Journal CA Section: 71
(Nuclear Technology) Section cross-reference(s): 10, 60
Detritiation of contaminated water is an essential part of nuclear power
prodn. The most promising methods used for this process are based
on catalyzed H isotope exchange reactions. It is proposed to replace
the Pt catalysts which are currently used in industry with immobilized
hydrogenase. Whole bacterial cells of *Alcaligenes eutrophus*
immobilized in Ca alginate or k-carrageenan gels were found to be
efficient catalysts of the reaction of H-T exchange in both a batch tank

reactor and in a column. The dependence of the reaction rate on the amt. of immobilized cells in the system, and on the concn. of the cells in the matrix, indicate that enzymic H-T exchange is not controlled by diffusion. Immobilized *A. eutrophus* cells are enzymically active over a wide range of pH, with a broad max. from pH 6.0 to 8.0, and are very resistant to inhibitors of hydrogenases such as O₂ and CO. Upon increasing the temp. from 4 to 37°, the rate of hydrogenase-catalyzed H-T exchange increases by a factor of 5. From the standpoint of catalytic efficiency, 1 g of PtO₂ is approx. equiv. to 10 g of cells (wet wt.). In contrast to Pt-based catalysts, bacterial hydrogenases (1) are potentially inexpensive; (2) can be readily available in bulk quantities; (3) are maximally active in liq. water.

Keywords

safety hydrogenase detritiation water
immobilized hydrogenase detritiation water
tritium removal water reactor power
health physics tritium removal water

Index Entries

Alcaligenes eutrophus
Clostridium pasteurianum
hydrogenase of, immobilized, for detritiation of water
Health physics
immobilized hydrogenase for detritiation of water in relation to
Exchange reaction catalysts
immobilized hydrogenase, for detritiation of water
Isotope separation
of hydrogen, immobilized hydrogenase detritiation of water in
relation to
Radioactive wastes
liq., tritium removal from aq., immobilized hydrogenase for
9005-35-0
11114-20-8
gels, hydrogenase immobilized in, as exchange reaction catalyst
for detritiation of water
10028-17-8, uses and miscellaneous
removal of, from water, immobilized hydrogenase application for

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94:37012

Study of the state of metal complexes fixed on polymer supports by x-ray photoelectron spectroscopic, infrared spectroscopic, and magnetic susceptibility methods.
Borod'ko, Yu. G.; Ivleva, I. N.; Echmaev, S. B.; Karklin, L. N.; Pomogailo, A. D.; Raevskii, A. V. (USSR). Katalizatory, Soderzhashch. Nanesen. Kompleksy. Materialy Simpoz., Tashkent, 1980, Novosibirsk, (Ch. 1), 123-6 From: Ref. Zh., Khim. 1980, Abstr. No. 22B1217 (Russian) 1980. DOCUMENT TYPE: Journal CA
Section: 67 (Catalysis and Reaction Kinetics) Section
cross-reference(s): 35, 73
Title only translated.

Keywords

metal complex polymer immobilized catalyst
IR metal complex immobilized
magnetic susceptibility metal complex immobilized
XPS metal complex immobilized

Index Entries

Magnetic susceptibility
of transition metal complex catalysts immobilized on polymer
supports
Alkenes, reactions
polymn. of, on transition metal complex immobilized catalysts
Polymerization catalysts
transition metal complexes, immobilized on polymer supports
7439-98-7, uses and miscellaneous
7440-02-0, uses and miscellaneous
7440-32-6, uses and miscellaneous
7440-48-4, uses and miscellaneous
catalysts, polymer-supported
9002-88-4
catalysts, transition metal complexes immobilized on
7429-90-5, org. compds.
polymn. of alkenes on immobilized catalysts in presence of

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92:198853

High-temperature polymerization of ethylene on gel-immobilized
titanium-magnesium catalysts.

Kabanov, V. A.; Ivanchev, S. S.; Smetanyuk, V. I.; Baulin, A. A.;
Martynova, M. A.; Kopylov, V. M. (Inst. Neftekhim. Sint. im. Topchieva,
Moscow, USSR). Vysokomol. Soedin., Ser. A, 22(2), 345-51
(Russian) 1980. CODEN: VYSAAF. ISSN: 0507-5475. DOCUMENT

TYPE: Journal CA Section: 35 (Synthetic High Polymers)

The title catalysts were prepd. from a graft copolymer of an EPDM
rubber with OH- or CO₂H-contg. polymers (ligand), TiCl₄, and
CH₂:CHCH₂MgBr [1730-25-2]. In the polymn. of ethylene at 1200°, the
activity of such catalysts could be regulated by varying the nature of the
polymer ligand, solvent, and organoaluminum cocatalyst. The optimal
amt. of grafted polymer ligand was 10-15%. The catalysts exhibited
long-term activity during polymn.

Keywords

gel immobilized Ziegler catalyst
ethylene polymn catalyst gel immobilized

Index Entries

Polymerization catalysts
gel-immobilized, Ziegler, for ethylene
1730-25-2
7429-90-5, org. derivs.
7550-45-0, uses and miscellaneous
catalysts, gel-immobilized Ziegler, for ethylene polymn.
27029-51-2
73681-98-8
73681-99-9
73682-00-5
graft, catalyst support, for gel-immobilized Ziegler systems, for
ethylene polymn.
9002-88-4
prepn. of, gel-immobilized titanium-magnesium catalysts for

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92:198852

Gel-immobilized metal complex catalysts for the polymerization of
ethylene.

Kabanov, V. A.; Smetanyuk, V. I.; Popov, V. G.; Martynova, M. A.;
Ul'yanova, M. V. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, USSR).
Vysokomol. Soedin., Ser. A, 22(2), 335-44 (Russian) 1980. CODEN:

VYSAAF. ISSN: 0507-5475. DOCUMENT TYPE: Journal CA Section:
35 (Synthetic High Polymers)

The general principles of prepg. gel-immobilized catalyst (GIC) systems from a swellable block or graft copolymer substrate contg. coordination sites, a transition metal compd., and a cocatalyst are discussed and some features of ethylene polymn. at 20-200° in the presence of such systems are described. The rate of polymn. and the mol. properties of the polyethylene [9002-88-4] formed depended on the nature of the catalyst components and on the crosslink d. of the swellable gel in GIC systems.

Keywords

gel immobilized polymn catalyst
ethylene polymn gel immobilized catalyst

Index Entries

Polymerization catalysts
gel-immobilized, Ziegler, for ethylene
1271-19-8
3264-82-2
7429-90-5, org. derivs.
7439-95-4, halo org. derivs.
7550-45-0, uses and miscellaneous
7632-51-1
7718-54-9, uses and miscellaneous
67332-62-1
catalysts, gel-immobilized Ziegler, for ethylene polymn.
27029-51-2
31074-11-0
73681-97-7
73681-98-8
73681-99-9
graft, catalyst support, for gel-immobilized Ziegler systems, for
ethylene polymn.
9002-88-4
prepn. of, gel-immobilized Ziegler catalysts for

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91:210536

Hydrosilylation of alkynes with triethylsilane in the presence of an immobilized catalyst.

Zaslavskaya, T. N.; Filippov, N. A.; Skvortsov, N. K.; Maretina, E. Yu.; Reikhsfel'd, V. O. (USSR). Khimiya i Praktich. Primenenie Kremnii- i Fosfororgan. Soedin., L., 64-70 From: Ref. Zh., Khim. 1979, Abstr. No. 16B1072(Russian) 1978. DOCUMENT TYPE: Journal CA Section: 22
(Physical Organic Chemistry)
Title only translated.

Keywords

hydrosilylation alkyne triethylene catalyst kinetics
chloroplatinic acid hydrosilylation catalyst
stereochem hydrosilylation
alkyne triethylsilane

Index Entries

Hydrosilylation catalysts
chloroplatinic acid immobilized on AB-17-8 anion exchanger
Alkynes
hydrosilylation of, in presence of immobilized catalysts, kinetics
and stereochem. of

Hydrosilylation

of alkynes with triethylsilane, kinetics, catalysis and stereochem. of

Kinetics of hydrosilylation

of alkynes, in presence of immobilized catalysts

Stereochemistry

regioselectivity, of hydrosilylation of alkynes in presence of

immobilized catalyst

12642-25-0

catalysts, contg. chloroplatinic acid, for hydrosilylation of alkynes,

kinetics and stereochem. with

16941-12-1, resin-bound

catalysts, for hydrosilylation of alkynes, kinetics and stereochem.

with

617-86-7

hydrosilylation of alkynes with, kinetics, catalysis and stereochem.

of

536-74-3

624-65-7

917-92-0

14267-92-6

hydrosilylation of, in presence of immobilized catalysts, kinetics

and stereochem. of

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91:175933

1-Butene.

Antonov, A. A.; Bocharov, Yu. N.; Kabanov, V. A.; Martynova, M. A.;

Pluzhnov, S. K.; Smetanyuk, V. I. (Topchiev, A. V., Institute of

Petrochemical Synthesis, USSR). U.S.S.R. SU 681036 25 Aug 1979

From: Otkrytiya, Izobret., Prom. Obrazttsy, Tovarnye Znaki 1979, (31),

91. (Russian). (Union of Soviet Socialist Republics). CODEN:

URXXAF. CLASS: IC: C07C011-08; C07C003-21. APPLICATION:

SU 75-2091700 3 Jan 1975. DOCUMENT TYPE: Patent CA Section:

35 (Synthetic High Polymers) Section cross-reference(s): 23

1-Butene [106-98-9] was prepd. by liq.-phase dimerization of C₂H₄ in

hydrocarbon or halohydrocarbon solvent at 0-100°/0-100 atm and in

presence of polymer-immobilized Ni/Al compd. catalyst. The Ni was

supported on a rubber-4-vinylpyridine graft copolymer and contained

0.4-40% poly(4-vinylpyridine). The Al cocatalyst consisted of a

carbon-chain polymer or natural rubber contg. 2-50 mol % CH₂AlRX

groups (X = halogen and R = C₁-8 hydrocarbyl).

Keywords

butene prepn dimerization ethylene

nickel catalyst dimerization ethylene

aluminum catalyst dimerization ethylene

vinylpyridine polymer dimerization catalyst

Index Entries

Dimerization catalysts

nickel/organoaluminum, polymer-immobilized, for ethylene

Rubber, natural, compounds

Rubber, synthetic

vinylpyridine-grafted, nickel catalyst supported by, for dimerization

of ethylene

7429-90-5, alkyl halogen derivs., polymers

catalyst, contg. nickel, for dimerization of ethylene

7440-02-0, uses and miscellaneous

catalyst, contg. polymeric aluminum compds., for dimerization of

ethylene

74-85-1, reactions

dimerization of, to butene, polymer-supported

nickel/organoaluminum polymer catalysts for
 100-43-6, polymer with rubber
 graft, nickel catalyst supported by, for dimerization of ethylene
 106-98-9, preparation
 manuf. of, by dimerization of ethylene, catalyst for
 25232-41-1
 nickel catalyst supported by, for dimerization of ethylene

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87:180059

Catalysis of p-nitrotrifluoroacetanilide hydrolysis by an imidazole derivative of polyethylenimine "ghosts".
 Meyers, William E.; Royer, G. P. (Dep. Biochem., Ohio State Univ., Columbus, Ohio, USA). J. Am. Chem. Soc., 99(18), 6141-2 (English) 1977. CODEN: JACSAT. DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods) Section cross-reference(s): 7
 A cross-linked deriv. of polyethylenimine (PEI) was prepd. that could be useful as a support in solid-phase org. synthesis, biopolymer sequencing, catalyst immobilization, and affinity chromatog. First, PEI is adsorbed to porous alumina beads. The PEI layer then is cross-linked. In the final step, the inorg. core is removed by treatment with acid or base resulting in the formation of hollow polymer ghosts. These structures have great chem. and mech. stability and other advantages include: compatibility with a wide range of solvent, high capacity (1 mequiv primary amine/g), and ease of prepn. PEI ghosts were modified by substitution of the primary amines with histidyl and lauroyl groups. The hydrolysis of p-nitrotrifluoroacetanilide at pH 8.2 is 230-fold faster in the presence of this catalyst than in the presence of imidazole. Synthetic catalysts such as lauroyl-, histidyl PEI-ghosts should be useful models for enzymes.

Keywords

polyethylenimine polymer ghost catalyst
 nitrotrifluoroacetanilide hydrolysis catalyst

Index Entries

Amides, reactions
 hydrolysis of, lauroylhisdidylpolyethylenimine as catalyst for
 Catalysts and Catalysis
 polyethylenimine hollow polymers
 9002-98-6, lauroylhisdidyl deriv.
 hollow peptide, prepn. of, as catalyst
 55258-11-2, polyethylenimine-immobilized
 hollow, prepn. of, as catalyst
 404-27-3
 hydrolysis of, lauroylhisdidylpolyethylenimine as catalyst for
 1956-11-2
 reaction of, with histidylpolyethylenimine, as catalyst
 51782-61-7
 reaction of, with immobilized polyethylenimine, as catalyst

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95:192914

Ethyl aluminum chlorides anchored on platinum-impregnated alumina as hyperacid catalysts for isomerization of light paraffins.
 Franck, J. P.; Le Page, J. F.; Roumegous, A. (Inst. Francais Petrole, Rueil-Malmaison 92506, Fr.). Stud. Surf. Sci. Catal., 7(Pt. B, New Horiz. Catal.), 1018-30 (English) 1981. CODEN: SSCTDM. ISSN: 0167-2991. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis and Reaction Kinetics) Section cross-reference(s): 23
 The anchoring of ethyl-Al sesquichloride on a Pt-impregnated alumina

was used in prepg. catalysts for the isomerization of light paraffins. The results obtained in low-temp. isomerization of normal pentane indicate that HCl is needed for the catalytic properties to appear, but that the use of HCl partial pressures >0.4 bars induces an irreversible deactivation of the catalyst. Moreover, comparative expts. on catalysts with or without Pt made it possible to ascertain that hyperacid catalysts prepd. in this way isomerized the paraffins according to a monofunctional mechanism; this result was confirmed by the nature and distribution of the isomers obtained in the isomerization of hexane.

Keywords

isomerization catalyst platinum alumina
ethyl aluminum chloride immobilized catalyst
hydrocarbon isomerization catalyst platinum
hydrogen chloride activation platinum catalyst

Index Entries

Hydrocarbons, reactions
isomerization of, on platinum-alumina hyperacid catalyst
impregnated with ethylaluminum chlorides
Isomerization catalysts
platinum-alumina, with anchored ethylaluminum chloride, for light paraffins
7647-01-0, uses and miscellaneous
catalyst activation by, of platinum-alumina with anchored ethylaluminum chloride for isomerization of light paraffins
7440-06-4, uses and miscellaneous
catalyst, alumina-supported, with ethylaluminum chloride
pretreatment for isomerization of light paraffins
12075-68-2
catalyst, platinum-alumina treated with, for isomerization of light paraffins

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91:192729

Gel-immobilized catalysts for olefin dimerization.
Kabanov, V. A.; Martynova, M. A.; Pluzhnov, S. K.; Smetanyuk, V. I.; Chediya, R. V. (Inst. Neftekhim. Sint., Moscow, USSR). Kinet. Katal., 20(4), 1012-18 (Russian) 1979. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds) Section cross-reference(s): 35
Catalysts prepd. from Ni-poly(4-vinylpyridine) complexes in an ethene-propene-ethylidenenorbornene polymer and alkylchloroaluminums (e.g., Bu₂AlCl) were used for the dimerization of ethene and propene. These catalysts offered a stable activity over a wide temp. range. Their activity increased with increasing degree of swelling in the solvent.

Keywords

dimerization olefin gel catalyst
nickel gel dimerization olefin
vinylpyridine polymer nickel dimerization olefin

Index Entries

Dimerization catalysts
gel-immobilized nickel complex, for olefins
Colloids
gels, dimerization catalysts in, for olefins
3537-86-8
catalysts from gel-immobilized nickel complexes and, for

dimerization of olefins
74-85-1, reactions
115-07-1, reactions
dimerization of, with gel-immobilized catalysts
7440-02-0, poly(4-vinylpyridine) complex
25232-41-1, nickel complex
gel-immobilized catalyst contg., for dimerization of olefins
25038-36-2
gel-immobilized nickel complex catalyst contg., for dimerization
of olefins

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94:102388

An immobilized Fenton catalyst.

Suh, Junghun; Kim, Kwang Yoo (Dep. Chem., Seoul Natl. Univ., Seoul
151, S. Korea). Bull. Korean Chem. Soc., 1(3), 113-14 (English) 1980.

CODEN: BKCSDE. DOCUMENT TYPE: Journal CA Section: 22
(Physical Organic Chemistry)

The Fe³⁺ complex of polymer I catalyzed the hydroxylation of PhOMe
with H₂O₂ to give a 95% yield of methoxyphenols. The reaction
occurred through the same mechanism as the homogeneous reaction.

Keywords

polymer iron complex Fenton catalyst
hydroxylation catalyst iron polymer complex
anisole hydroxylation iron polymer complex

Index Entries

Kinetics of hydroxylation
of anisole by hydrogen peroxide over polymer-bound ferric ion
Hydroxylation catalysts
polymer-bound ferric ion, for anisole
9003-53-6, azopyrocatechol derivs., iron complexes
catalysts, for hydroxylation of anisole
7722-84-1, reactions
hydroxylation of anisole by, immobilized Fenton catalyst for
100-66-3, reactions
hydroxylation of, with hydrogen peroxide, immobilized Fenton
catalyst for

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94:37017

Effect of the structure of a polymer base on the activity of immobilized
molybdenum-containing catalysts in olefin epoxidation reactions.

Sapunov, V. N.; Vardanyan, V. D.; Mustafaev, F. B.; Lebedev, N. N.;
Rico, Enrico Arzate (USSR). Katalizatory, Soderzh. Nanesen.
Kompleksy, Novosibirsk, 40-3 From: Ref. Zh., Khim. 1980, Abstr. No.
22S297 (Russian) 1980. DOCUMENT TYPE: Journal CA Section: 67
(Catalysis and Reaction Kinetics)

Title only translated.

Keywords

immobilized molybdenum epoxidn catalyst
olefin epoxidn immobilized molybdenum

Index Entries

Alkenes, reactions
epoxidn. of, on immobilized molybdenum-contg. catalyst

Epoxidation catalysts
molybdenum-contg., polymer-immobilized for olefins
7439-98-7, uses and miscellaneous
catalysts, for epoxidn. of olefins, immobilized

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94:3476

Enzymes in organic semiconductors. Hydrogenase immobilized on heat-treated polyacrylonitriles.
Bachurin, S. O.; Varfolomeev, S. D.; Tsyachnaya, I. V.; Davydov, B. E.; Mavrenkova, G. V.; Berezin, I. V. (USSR). Dokl. Akad. Nauk SSSR, 253(2), 370-2 [Phys. Chem.] (Russian) 1980. CODEN: DANKAS.
ISSN: 0002-3264. DOCUMENT TYPE: Journal CA Section: 22
(Physical Organic Chemistry) Section cross-reference(s): 7, 35
Thiocapsa roseopersicina Hydrogenase immobilized on poly(acrylonitrile) showed max. activity when the polymer had been heated to 850° and then oxidized with HNO₃ before enzyme immobilization. The polymer could bind 25 mg enzyme protein/g. The immobilized enzyme retained 80% of its activity during storage in air at 30° for 1 mo, whereas the native enzyme lost 40-50% of its activity under these conditions. Incubation of the immobilized enzyme in reduced methylviologen soln. resulted in activation of the enzyme and adsorption of the methylviologen on the polymer. Exposure to air deactivated the enzyme and desorbed the methylviologen.

Keywords

hydrogenase immobilized polyacrylonitrile activity
methylviologen reduced reaction immobilized hydrogenase

Index Entries

Oxidation catalysts
hydrogenase immobilized on polyacrylonitrile, for reduced methylviologen
25014-41-9
hydrogenase immobilized on, catalytic activity of, in oxidn. of reduced methylviologen
9027-05-8
immobilized on polyacrylonitrile, catalytic activity of, in oxidn. of reduced methylviologen
15591-62-5
oxidn. of, hydrogenase immobilized on polyacrylonitrile as catalyst for

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92:129326

L-Amino acids.
Vainberga, I.; Arens, A.; Ozolina, T.; Rozina, I.; Seletskaya, A. S. (USSR). U.S.S.R. SU 706402 30 Dec 1979 From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1979, (48), 86. (Russian). (Union of Soviet Socialist Republics). CODEN: URXXAF. CLASS: IC: C07C101-02. APPLICATION: SU 78-2637170 3 Jul 1978. DOCUMENT TYPE: Patent CA Section: 34 (Synthesis of Amino Acids, Peptides, and Proteins) Section cross-reference(s): 7
L-Amino acids were prepd. by asym. hydrolysis of racemic N-acyl amino acids catalyzed by immobilized aminoacylase, covalently bonded with silanated silochrome. The process was improved by using aminoacylase bonded with silanated silochrome with p-benzoquinone.

Keywords

amino acid
 racemic acyl amino acid hydrolysis aminoacylase
 resoln amino acid hydrolysis aminoacylase

Index Entries

Resolution

of DL-amino acids, asym. hydrolysis of acyl DL-amino acids
 catalyzed by immobilized aminoacylase in relation to

Hydrolysis catalysts

asym., immobilized aminoacylase, for acyl DL-amino acids

Hydrolysis

asym., of acyl DL-amino acids in presence of immobilized
 aminoacylase

Amino acids, reactions

DL-, N-acyl, asym. hydrolysis of, immobilized aminoacylase as
 catalyst for

Amino acids, preparation

L-, prepn. of, by asym. hydrolysis of acyl DL-amino acids with
 catalysis by immobilized aminoacylase

9012-37-7

immobilized, catalyst, for asym. hydrolysis of acyl DL-amino acids

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90:18297

Enzymes as catalysts of electrochemical reactions.

Varfolomeev, S. D.; Berezin, I. V. (Dep. Chem. Enzymol., Moscow
 State Univ., Moscow, USSR). J. Mol. Catal., 4(6), 387-99 (English)
 1978. CODEN: JMCADS. DOCUMENT TYPE: Journal CA Section: 7

(Enzymes)

A theory is presented for constructing electrocatalysts based on
 immobilized enzymes. High-rate enzymic electron transfer reactions in
 solns. and heterogeneous systems were analyzed. Macrokinetics of
 electrocatalysis with enzymes anchored to equiaccessible surface
 electrodes were discussed, and a no. of expressions interrelating
 electrode potential and current output on the one hand, and kinetic and
 microkinetic characteristics of the system on the other, were derived.
 Electron transfer from the enzyme active center to the conducting matrix
 was discussed. Two mechanisms were considered: the direct electron
 transfer mechanism and the mechanism involving intermediate carriers
 (mediators). The technol. potential of immobilized enzyme
 electrocatalysis was surveyed (bioelectrochem. converters,
 biophotolysis of water, specific electrosynthesis, biochem. sensors).

Keywords

immobilized enzyme electrochem catalyst

Index Entries

Electric current

generation of, by immobilized enzymes, substrate flow in relation
 to

Diffusion

immobilized enzyme electrochem. catalytic efficiency in relation to

Electron exchange catalysts

immobilized enzymes as

Enzymes

immobilized, as electrochem. reaction catalysts at electrodes

Kinetics, enzymic

Michaelis constant

of enzymes immobilized on electrodes

Kinetics of electron exchange

of immobilized enzymes, model for

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94:91030

Enzyme-like synthetic catalysts (synzymes).

Royer, G. P. (Dep. Biochem., Ohio State Univ., Columbus, OH, USA).

Adv. Catal., 29, 197-227 (English) 1980. CODEN: ADCAAX. ISSN:

0065-2342. DOCUMENT TYPE: Journal; General Review CA Section:

67 (Catalysis and Reaction Kinetics) Section cross-reference(s): 7

A review on catalysis by cycloamyloses, macrocyclic amines, paracycloplanes, cyclic peptides, polypeptides, vinyl polymers, polyethylenimine-based catalysts, immobilized catalysts, and semisynthetic enzymes. 101 Refs.

Keywords

review enzyme synthetic catalyst

synzyme catalysis review

polymeric catalyst review

macrocyclic catalyst review

polypeptide catalyst review

paracycloplane catalyst review

cycloamylose catalyst review

Index Entries

Peptides

Vinyl compounds, polymers

catalysts

Catalysts and Catalysis

immobilized

Enzymes

model systems for

Amines, uses and miscellaneous

macrocyclic, catalysis by

9005-82-7

catalysis by

9002-98-6

catalysts based on

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92:163501

Hydroalumination of olefins catalyzed by immobilized titanium compounds.

Sato, Fumie; Ishikawa, Hiroaki; Takahashi, Yoshihiko; Miura,

Masatoshi; Sato, Masao (Tokyo Inst. Technol., Tokyo 152, Japan).

Tetrahedron Lett., (39), 3745-8 (English) 1979. CODEN: TELEAY.

ISSN: 0040-4039. DOCUMENT TYPE: Journal CA Section: 23

(Aliphatic Compounds) Section cross-reference(s): 67

SiO₂-supported TiCl₄ and divinylbenzene crosslinked

polystyrene-supported titanocene dichloride were prep'd., the latter by 2

procedures. These heterogenized Ti compds. are excellent catalysts

for hydroalumination of alkenes. Thus, 1-hexene with LiAlH₄ in the

presence of either catalyst followed by hydrolysis gave 98-9%

n-hexane.

Keywords

hydroalumination alkene immobilized titanium catalyst

cyclopentadienyltitanium immobilized catalyst hydroalumination

Index Entries

Alkenes, reactions

hydroalumination of, heterogenized titanium catalysts for
 Hydroalumination catalysts
 heterogenized, silica- and polystyrene-supported titanium compds.,
 for alkenes
 1271-19-8, polystyrene-bound
 7550-45-0, silica gel-bound
 catalyst, for hydroalumination of alkenes
 100-40-3
 591-93-5
 592-41-6, uses and miscellaneous
 592-42-7
 3710-30-3
 hydroalumination of, immobilized titanium catalysts for
 9003-70-7
 support, for titanium tetrachloride and titanocene dichloride

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92:41220

Dimerization of ethylene in the presence of a complex of rhodium with
 tin chloride ligands fixed on an anion exchanger.
 Antonov, P. G.; Borunova, N. V.; Anufriev, V. I.; Ignatov, V. M. (Leningr.
 Tekhnol. Inst., Leningrad, USSR). Izv. Vyssh. Uchebn. Zaved., Khim.
 Khim. Tekhnol., 22(8), 952-4 (Russian) 1979. CODEN: IVUKAR.
 ISSN: 0579-2991. DOCUMENT TYPE: Journal CA Section: 23
 (Aliphatic Compounds) Section cross-reference(s): 67
 [Rh(SnCl₃)₂Cl₄]₃- immobilized on AV-17-8 anion-exchange resin is
 highly active, stable and selective catalyst for the dimerization of C₂H₄
 to cis- and trans-2-butene in acidic media. A math. model was derived
 to describe the process in terms of the C₂H₄ pressure, temp. and
 reaction time. The optimum yield of butenes was 88%, obtained in
 ~1:2.7 cis-trans ratio after 6 h at 75° and 42 atm.

Keywords

ethylene dimerization catalyst optimization
 rhodium tin complex dimerization catalyst
 model dimerization ethylene catalyst

Index Entries

Simulation model
 for dimerization of ethylene in presence of rhodium-tin chloride
 complex immobilized on anion exchanger
 Optimization
 of ethylene dimerization in presence of rhodium-tin chloride
 complex immobilized on anion exchanger
 Dimerization
 of ethylene in presence of rhodium-tin complex, simulation and
 optimization of
 Dimerization catalysts
 rhodium-tin chloride complex on anion exchanger, for ethylene,
 simulation and optimization with
 72257-89-7, resin-bound
 catalysts, for dimerization of ethylene, simulation and optimization
 with
 74-85-1, reactions
 dimerization of, simulation and optimization of catalytic
 590-18-1
 624-64-6
 prepn. of, by dimerization of ethylene, simulation and optimization
 of catalytic
 7772-99-8, reactions
 reaction of, with rhodium trichloride, in synthesis of catalyst for
 dimerization of ethylene

10049-07-7

reaction of, with stannous chloride, in synthesis of catalyst for dimerization of ethylene

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90:104033

Immobilized metal complexes for organic synthesis.

Toshima, Naoki (Fac. Eng., Univ. Tokyo, Tokyo, Japan). Yuki Gosei Kagaku Kyokaishi, 36(11), 909-16 (Japanese) 1978. CODEN: YGKKAE. ISSN: 0372-770X. DOCUMENT TYPE: Journal; General Review CA Section: 29 (Organometallic and Organometalloidal Compounds)

Immobilization of homogeneous metal complexes was explained from the viewpoint of utilizing the metal complexes for org. synthesis. The process for making the heterogenized homogeneous catalysts, such as polystyrene anchored catalysts linked by a phosphine or a cyclopentadienyl ligand, ionic polymer attached catalysis, and metal complex catalysts with inorg. support were described. The characteristics of immobilized metal complex catalysts are simple treatment, easy isolation and stabilization of active sites, and availability of multifunctional nature. Heterogenized homogeneous catalysts were applied to org. syntheses such as hydrogenation of olefins and dienes, hydroformylation of olefins, and asym. hydrogenation. (A review with 60 refs.).

Keywords

review immobilized metal complex
catalyst immobilized metal review
org synthesis catalyst review

Index Entries

Organometallic compounds
Metals, compounds
immobilized complexes, for org. syntheses
Synthesis
of org. compds., immobilized metal complexes for

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88:185329

Immobilized α -chymotrypsin: pore diffusion control owing to pH gradients in the catalyst particles.

Halwachs, W.; Wandrey, C.; Schuegerl, K. (Inst. Tech. Chem., Tech. Univ. Hannover, Hannover, Ger.). Biotechnol. Bioeng., 20(4), 541-54 (English) 1978. CODEN: BIBIAU. ISSN: 0006-3592. DOCUMENT TYPE: Journal CA Section: 7 (Enzymes)

The fast enzymic hydrolysis of DL-phenylalanine Me ester to L-phenylalanine and D-phenylalanine Me ester with immobilized chymotrypsin was chosen as a model reaction. Under the exptl. conditions, the pore diffusion was the rate-limiting step of this reaction owing to the pH gradient in the particles. The effectiveness of the catalyst was exptl. detd. as a function of the substrate concn. based on measurements of the enzyme protein content of native and immobilized enzyme. The proteolytic reaction was theor. treated by also using a pore diffusion model which took into account the concn. gradients of substrate and product, pH- and enzyme activity profiles, as well as the change of buffer capacity of the solute in the catalyst particles. The model parameters were exptl. detd. for the investigated system. It was shown that conditions are possible for which the effectiveness of the catalyst exceeds unity.

Keywords

chymotrypsin immobilized pore diffusion control

Index Entries

Kinetics, enzymic

of chymotrypsin immobilized deriv.

Diffusion

pore, immobilized chymotrypsin reaction control by

2577-90-4

15028-44-1

hydrolysis of, by immobilized chymotrypsin, pore diffusion control in

9004-07-3

immobilized, phenylalanine Me ester hydrolysis by, pore diffusion control in

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88:22277

Polystyrene-immobilized imidazole ligands; metal complexes and catalytic properties.

Hulsbergen, F. B.; Manassen, J.; Reedijk, J.; Welleman, J. A. (Dep. Chem., Delft Univ. Technol., Delft, Neth.). J. Mol. Catal., 3(1-3), 47-50 (English) 1977. CODEN: JMCADS. DOCUMENT TYPE: Journal CA

Section: 25 (Noncondensed Aromatic Compounds) Section

cross-reference(s): 21, 67, 35

Polystyrene, crosslinked by the addn. of 2% divinylbenzene, having 20-30% of its Ph groups p-substituted by -CH₂-N-imidazole ligands, binds strongly to equimolar amts. of metal(II) salts. The catalytic properties of polymeric Cu(II) complexes in the oxidn. of 2,6-dimethylphenol are mentioned.

Keywords

oxidative dimerization catalyst phenol

polystyrene imidazole metal catalyst

copper polystyrene oxidn catalyst

Index Entries

Catalysts and Catalysis

metal complexes of polystyrene-immobilized imidazole ligands

Oxidation catalysts

metal complexes of polystyrene-immobilized imidazole ligands, for dimethylphenol

Dimerization catalysts

oxidative, metal complexes of polystyrene-immobilized imidazole ligands, for dimethylphenol

7440-50-8, complexes with imidazolized polystyrene

9003-53-6, imidazolized, copper complexes

catalysts, for oxidative dimerization of dimethylphenol

576-26-1

oxidative dimerization of, catalysts for

5587-42-8

reaction of, with chloromethylated polystyrene

9003-53-6, imidazolized

reaction of, with metal imidazole complexes

9003-53-6, chloromethylated

reaction of, with sodium imidazolate

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87:196426

A radiation grafting technique for the immobilization of enzymes and

the heterogenizing of catalytically active homogeneous metal complexes.

Barker, Howard; Garnett, John L.; Kenyon, Robert S.; Levot, Ronald; Liddy, Michael S.; Long, Mervyn A. (Dep. Chem., Univ. New South Wales, Kensington, Aust.). Proc. Int. Congr. Catal., 6th, Meeting Date 1976, Volume 1, 551-60. Edited by: Bond, Geoffrey C.; Wells, Peter B.; Tompkins, F. C. Chem. Soc.: Letchworth, Engl. (English) 1977.

CODEN: 36PRA7. DOCUMENT TYPE: Conference CA Section: 7

(Enzymes) Section cross-reference(s): 9, 35

A novel radiation grafting technique was developed for the immobilization of enzymes and the heterogenizing of catalytically active homogeneous metal complexes. For enzyme immobilization, monomers such as p-nitrostyrene were surface grafted to trunk polymers [polypropylene, polyethylene, poly(vinyl chloride)] using ionizing radiation. The NO₂ group was converted into the isothiocyanate deriv. to which enzyme, trypsin, was covalently bound. In insolubilized form, trypsin retained proteolytic and esterolytic activity. To heterogenize catalytically active homogeneous metal complexes, monomers contg. suitable functional groups (NO₂, Cl, Br, NH₂) were radiation grafted to the above trunk polymers. The resulting heterogeneous catalysts are active for the hydrogenation of olefins. The advantages of radiation grafting for the insolubilization of enzymes and metal complexes are discussed. The present preliminary studies show that the technique is (1) feasible; (2) amenable to UV light, .gamma.-, and electron beam-irradn. procedures; (3) applicable to any synthetic or natural trunk polymer; and (4) potentially the most versatile of all insolubilization procedures.

Keywords

enzyme immobilization graft copolymer
hydrogenation catalyst immobilized metal complex

Index Entries

Alkenes, reactions

hydrogenation of, on immobilized catalytic metal complexes

Enzymes

immobilization of, on radiation-produced graft copolymers

Hydrogenation catalysts

immobilized metal complexes as

Solvent effect

in cyclohexene hydrogenation, on immobilized catalytic metal complexes

Gamma ray, chemical and physical effects

Radiation, chemical and physical effects

in graft copolymer formation, for enzyme and catalytic metal complex immobilization

64-17-5, uses and miscellaneous

108-88-3, uses and miscellaneous

123-91-1, uses and miscellaneous

7732-18-5, uses and miscellaneous

cyclohexene hydrogenation in presence of, on radiation-produced immobilized catalytic metal complexes

110-83-8, reactions

hydrogenation of, on radiation-produced immobilized catalytic metal complexes

9002-07-7

immobilization of, on radiation-produced graft copolymers

31343-22-3, rhodium complexes

54519-96-9, rhodium complexes

56552-05-7, rhodium complexes

64816-42-8, rhodium and palladium complexes

64816-43-9, rhodium and iridium complexes

prepn. and cyclohexene hydrogenation on

54519-96-9
 64808-95-3
 64808-96-4
 64808-97-5
 prepn. and enzyme immobilization on
 64816-42-8
 64816-43-9
 64816-44-0
 64816-45-1
 64816-46-2
 64816-47-3
 prepn. of, by radiation

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95:203459

Metal porphyrin complexes. Part 4. Peroxidatic properties of polymeric imidazole-iron-porphyrin complexes.
 Kuehn, Manfred; Ristau, Otto; Coupek, Jiri (Zentralinst. Molekularbiol., DAW, Berlin-Buch 1115, Ger. Dem. Rep.). Z. Chem., 21(6), 231-2 (German) 1981. CODEN: ZECEAL. ISSN: 0044-2402. DOCUMENT TYPE: Journal CA Section: 25 (Noncondensed Aromatic Compounds)
 An immobilized Fe(III)-protoporphyrin IX complex catalyzed the hydroxylation of PhNH₂, 4-MeC₆H₄NH₂, and AcNHPh by H₂O₂. Under the same conditions, aminophenazone, ethylmorphine, benzophetamine, and 4-MeOC₆H₄NO₂ were demethylated. PhNMe₂ was both hydroxylated and demethylated. Therefore the title compd. can serve as a model for the hydroxylating and demethylating enzyme, cytochrome P-450.

Keywords

iron porphyrin hydroxylation demethylation catalyst

Index Entries

Demethylation catalysts
 Hydroxylation catalysts
 immobilized iron(III) protoporphyrin IX complex, for arom. compds.
 14875-96-8, immobilized
 catalysts, for arom. compd. hydroxylation and demethylation
 58-15-1
 76-58-4
 100-17-4
 156-08-1
 demethylation of, catalyst for
 121-69-7, reactions
 hydroxylation and demethylation of, catalyst for
 62-53-3, reactions
 103-84-4
 hydroxylation of, catalyst for
 106-49-0, preparation
 prepn. of

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95:192861

Anchored complexes in fundamental catalytic research.
 Ermakov, Yu. I. (Inst. Catal., Novosibirsk 630090, USSR). Stud. Surf. Sci. Catal., 7(Pt. A, New Horiz. Catal.), 57-76 (English) 1981. CODEN: SSCTDM. ISSN: 0167-2991. DOCUMENT TYPE: Journal; General
 Review CA Section: 67 (Catalysis and Reaction Kinetics)
 A review with 54 refs.

Keywords

review anchored complex catalyst
metal complex immobilized catalyst review

Index Entries

Coordination compounds
catalyst, immobilized on various substrates
Catalysts and Catalysis
immobilized metal complexes as

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95:139381

Sirotherm catalysis. Homogeneously catalyzed carbonylations using polymer-bound rhodium complexes.
Kawabata, Yasujiro; Pittman, Charles U., Jr.; Kobayashi, Rikio (Dep. Chem., Univ. Alabama, University, AL 35486, USA). J. Mol. Catal., 12(1), 113-19 (English) 1981. CODEN: JMCADS. ISSN: 0304-5102.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis and Reaction Kinetics)

Resin-bound Rh catalysts are described which release Rh complexes into soln. at the reaction operating temp. and then re-immobilize these complexes into the resin matrix when the reaction mixt. is cooled. Sepn. of products is facilitated, but the active catalyst species operates homogeneously during the reaction. SirothermTM thermally regenerable ion exchange resins for desalination were used to recover RhCl₃ from hydroformylation reaction mixts.

Keywords

homogeneous catalysis polymer bound rhodium
hydroformylation catalyst polymer bound rhodium
Sirotherm ion exchanger rhodium catalyst
alkene hydroformylation catalyst polymer bound

Index Entries

Transition metals, uses and miscellaneous
catalysts, for hydroformylation, thermally regenerable ion exchange resins for immobilization of homogeneous
Catalysts and Catalysis
homogeneous, thermally regenerable ion exchange resins for immobilization of
Alkenes, reactions
hydroformylation of, using homogeneous catalysts subsequently immobilized on thermally regenerable ion exchange resins
Hydroformylation catalysts
rhodium, thermally regenerable ion exchange resins for immobilization of homogeneous
Ion exchangers
thermally regenerable, catalysts, for immobilization of homogeneous
7440-16-6, uses and miscellaneous
catalysts, for hydroformylation, thermally regenerable ion exchange resins for immobilization of homogeneous
109-67-1
hydroformylation of, polymer-bound rhodium catalyst for
64975-04-8
ion exchanger, homogeneous rhodium hydroformylation catalysts
immobilized on thermally regenerable

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95:130955

Immobilized b-glucosidase as a supplemental enzymic catalyst for hydrolysis of cellulose by cellulase.

Coughlin, Robert W.; Klei, H. E.; Sundstrom, D. W.; Biederman, G.; Ziolkowski, K. (Dep. Chem. Eng., Univ. Connecticut, Storrs, CT 06268, USA). Proc. Jt. US/USSR Conf. Microb. Enzyme React. Proj.

US/USSR Jt. Work. Group Prod. Subst. Microbiol. Means, 5th, Meeting Date 1979, 643-60. Edited by: Weetall, Howard H.; Bungay, Henry R.

NTIS: Springfield, Va. (English) 1980. CODEN: 46DZAG.

DOCUMENT TYPE: Conference CA Section: 16 (Fermentations)

b-Glucosidase [9001-22-3] from *Aspergillus phoenicis* was immobilized on alumina and used to enhance D-glucose [50-99-7] prodn. from cellulose [9004-34-6] by cellulase [9012-54-8]. A batch reactor contg. 225 units cellulase plus 200 units immobilized b-glucosidase and 5 g Solka-floc/L produced 100% more glucose in 30 h than a reactor contg. no b-glucosidase.

Keywords

immobilized glucosidase cellulose cellulase

Index Entries

9012-54-8

glucose prodn. from cellulose by, b-glucosidase enhancement of

9004-34-6, biological studies

glucose prodn. from, immobilized b-glucosidase in

9001-22-3

immobilized, in glucose prodn. from cellulose

50-99-7, preparation

manuf. of, from cellulose, immobilized b-glucosidase in

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95:96904

Rhodium(I)-copper(II) catalyzed oxidation of 1-hexene by oxygen using immobilized, site-separated organosulfide complexes.

Nyberg, Eric D.; Drago, Russell S. (Sch. Chem. Sci., Univ. Illinois, Urbana, IL 61801, USA). J. Am. Chem. Soc., 103(16), 4966-8

(English) 1981. CODEN: JACSAT. ISSN: 0002-7863. DOCUMENT

TYPE: Journal CA Section: 23 (Aliphatic Compounds) Section

cross-reference(s): 67

Silica gel-bound organosulfide (SG-SH) was reacted with $\text{Rh}(\text{CO})_2\text{Sn}'\text{BF}_4$ (S' = solvent) to produce $(\text{m-SG-S})[\text{2Rh}_2(\text{CO})_4]$ (I) or $\text{SG-SRh}(\text{CO})_2\text{Sn}'$ (II). The latter was obtained from SG-SH samples possessing site-sepd. organosulfide groups while I required proximate sulfide groups. II is the 1st example of a monomeric organosulfide transition metal carbonyl complex which is stable in the absence of addnl., noncarboinyl ligands. Both the Rh(I) and Cu(II) species previously reported to be necessary for the O_2 oxidn. of 1-hexene to 2-hexanone were bound to the SG-SH support, and found to be an effective catalytic system for this reaction. The monomer II was much more active than the dimer I. Increased lifetimes were obsd. for the SG-SH bound catalysts, relative to homogeneous analogs.

Keywords

hexene oxidn rhodium catalyst

oxidn catalyst rhodium organosulfide

copper organosulfide oxidn catalyst

sulfide org rhodium complex

Index Entries

Silica gel, compounds

bound with organosulfides and rhodium, catalysts, for oxidn. of

hexene
Oxidation catalysts
rhodium and copper, as immobilized organosulfide complexes, for
hexene
Carbonyls
rhodium, organosulfide complexes
7440-16-6, complex with silica gel-bound organosulfide
7440-50-8, complex with silica gel-bound organosulfide
catalysts, for oxidn. of hexene
4420-74-0
immobilization on silica gel and reaction with rhodium complex
592-41-6, reactions
oxidn. of, catalyst for

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94:155809
Immobilized transition-metal carbonyls and related catalysts.
Bailey, David C.; Langer, Stanley H. (Dep. Chem. Eng., Univ.
Wisconsin, Madison, WI 53706, USA). Chem. Rev., 81(2), 109-48
(English) 1981. CODEN: CHREAY. ISSN: 0009-2665. DOCUMENT
TYPE: Journal; General Review CA Section: 21 (General Organic
Chemistry) Section cross-reference(s): 67
A review with 308 refs.

Keywords

review catalyst immobilized transition metal
carbonyl transition metal review

Index Entries

Transition metals, compounds
carbonyl complexes, as immobilized catalysts
Catalysts and Catalysis
immobilized transition metal carbonyls as
Carbonyls
transition metal complexes, as immobilized catalysts

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94:140223
Study of immobilized catalysts. III. Active center formation processes
in modified systems.
Pomogailo, A. D.; Baishiganov, E.; Khvostik, G. M. (Otd. Inst. Khim.
Fiz., Chernogolovka, USSR). Kinet. Katal., 21(6), 1535-41 (Russian)
1980. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE:
Journal CA Section: 35 (Synthetic High Polymers) Section
cross-reference(s): 67, 78
Reactions forming active samples were studied for ¹⁴C-labeled
CH₂:CMeCO₂Me.VCl₄ (I) [41441-78-5]-organoaluminum compd
systems as models for transition metal catalysts immobilized on
polymeric supports. In C₆H₆, I underwent dissocn. into its components;
at 20° the equil. const., heat, and entropy of dissocn. were 0.0018
mol/L, 9.3 kcal/mol, and 19.3 cal/mol-K, resp. Adding org. Al compds.
to I resulted in transcoordination, the rate of which depended on the
Lewis acidity of the Al compd. For Et₃Al [97-93-8], the equil. const. of
transcoordination at 20° was 0.087, and the activation energy 4.4 ± 0.5
kcal/mol. The kinetics of polymn. of C₂H₄ [74-85-1] in the presence of
VCl₄-iso-Bu₂AlCl [1779-25-5] and I-iso-Bu₂AlCl catalysts indicated the
same type of active centers in each catalyst.

Keywords

vanadium tetrachloride complex catalyst

polymn catalyst active center
 kinetics polymn ethylene catalyst
 methacrylate complex catalyst polymn
 transcoordination vanadium tetrachloride catalyst

Index Entries

Heat of dissociation
 of Me methacrylate-vanadium tetrachloride complex in benzene
 Entropy
 of dissocn., of Me methacrylate-vanadium tetrachloride complex in
 benzene
 Kinetics of polymerization
 of ethylene, in presence of vanadium tetrachloride coordination
 catalysts
 Kinetics of coordination
 trans-, of Me methacrylate-vanadium tetrachloride complex with
 organoaluminum compds.
 Polymerization catalysts
 vanadium tetrachloride complexes, for olefins, active centers in
 1779-25-5
 7632-51-1
 41441-78-5
 catalysts, for polymn. of ethylene, active centers in
 74-85-1, reactions
 polymn. of, by coordination catalysts, active centers and kinetics in
 97-93-8, reactions
 transcoordination by, of Me methacrylate-vanadium tetrachloride
 complex, kinetics of
 96-10-6, reactions
 563-43-9, reactions
 transcoordination of Me methacrylate-vanadium tetrachloride
 complex with, kinetics of

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94:12450

Use of immobilized carboxypeptidase Y (I-CPY) as a catalyst for
 deblocking in peptide synthesis.
 Royer, G. P.; Hsiao, H. Y.; Anantharamaiah, G. M. (Dep. Biochem.,
 Ohio State Univ., Columbus, OH 43210, USA). Biochimie, 62(8-9),
 537-41 (English) 1980. CODEN: BICMBE. ISSN: 0300-9084.
 DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods)
 Section cross-reference(s): 34
 CPY is known to be a metal-free carboxypeptidase from yeast with
 broad specificity. In addn. to exopeptidase activity at acid pH, the
 enzyme is an effective esterase at alk. pH. N-a-Acetyl-L-tyrosine Et
 ester is hydrolyzed faster by CPY than by chymotrypsin. Thus, the
 immobilized form of the enzyme would be of value in removing ester
 groups from the C-terminal ends of peptides. A sequential synthesis is
 described using I-CPY and a-CO₂H deblocking of peptides made by
 conventional methods.

Keywords

peptide prepn enzyme deblocking
 carboxypeptidase deblocking peptide synthesis

Index Entries

Peptides, compounds
 esters, deblocking of, with immobilized carboxypeptidase Y
 Peptides, preparation
 prepn. of, deblocking with immobilized carboxypeptidase Y in
 2867-06-3

5276-63-1
 13075-30-4
 35909-93-4
 55739-16-7
 60644-13-5
 66851-68-1
 71171-90-9
 76025-68-8
 76025-69-9
 76025-70-2
 76025-71-3
 76025-72-4
 deblocking of, with immobilized carboxypeptidase Y
 9046-67-7
 immobilized, peptide ester deblocking by, in sequential synthesis
 70975-16-5
 76025-67-7
 prepn. of

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93:114980

Optically active amino acids.

Kalis, V.; Feldnere, V.; Lauceniece, D. (USSR). U.S.S.R. SU 730682
 30 Apr 1980 From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki
 1980, (16), 84. (Russian). (Union of Soviet Socialist Republics).
 CODEN: URXXAF. CLASS: IC: C07C101-02; A61K031-195.

APPLICATION: SU 76-2307174 4 Jan 1976. DOCUMENT TYPE:

Patent CA Section: 34 (Synthesis of Amino Acids, Peptides, and
 Proteins)

Optically active amino acids were prepd. by asym. hydrolysis of
 racemic N-acyl amino acids using immobilized semipermeable
 acylase polymer. Acylase was kept from the substrate in a cavity of
 semipermeable membrane, e.g., cellophane with pores not larger than
 35-40A°.

Keywords

optically active amino acid
 resoln amino acid
 acyl amino acid hydrolysis acylase

Index Entries

Hydrolysis catalysts

asym., immobilized acylase, for acyl DL-amino acids

Resolution

of amino acids, hydrolysis of acyl DL-amino acids catalyzed by
 immobilized acylase in relation to

Amino acids, reactions

acyl, asym. hydrolysis of, immobilized acylase as catalyst for
 9012-37-7

immobilized, catalyst, for hydrolysis of acyl DL-amino acids

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92:65370

Use of an immobilized transition metal complex and support-fixed
 catalyst.

Pscheidl, Helmut; Moeller, Enno; Juergens, Hans Ulrich; Haberland,
 Detlef (Ger. Dem. Rep.). Ger. (East) DD 138153 17 Oct 1979, 14 pp.
 (German). (German Democratic Republic). CODEN: GEXXA8.

CLASS: IC: B01J031-24. APPLICATION: DD 78-207166 8 Aug 1978.

DOCUMENT TYPE: Patent CA Section: 67 (Catalysis and Reaction
 Kinetics)

Transition metal complexes on carriers were fixed in gas chromatog. app., the app. being used as the reactor. In an example, cyclohexene was hydrogenated with a catalyst from tris(triphenylphosphine) rhodium(I) chloride on silica gel, fixed in a gas chromatog. reactor.

Keywords

transition metal catalyst chromatog reactor
gas chromatog reactor catalytic
rhodium catalyst fixed chromatog reactor
hydrogenation catalyst fixed chromatog reactor
cyclohexene hydrogenation rhodium catalyst

Index Entries

Transition metals, compounds
complexes, catalysts, on supports, in reactors using gas
chromatog. method
Chromatography, gas
reactor using, with transition metal complexes on supports as
catalysts
Hydrogenation catalysts
rhodium complexes, on silica gel, for cyclohexene in gas
chromatog. type reactor
Catalysts and Catalysis
transition metal complexes, on supports, in reactor using gas
chromatog method
14694-95-2
catalysts, on silica gel, in hydrogenation of cyclohexene in gas
chromatog. type reactor
110-83-8, reactions
hydrogenation of, in gas chromatog. type reactor, with catalysis by
rhodium complexes on silica gel

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91:123147

Polymer-supported η^5 -cyclopentadienylcobalt. An immobilized "homogeneous" Fischer-Tropsch catalyst. Perkins, Patrick; Vollhardt, K. Peter C. (Dep. Chem., Univ. California, Berkeley, CA 94720, USA). J. Am. Chem. Soc., 101(14), 3985-7 (English) 1979. CODEN: JACSAT. ISSN: 0002-7863. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Tests of the catalytic potential of 3% divinylbenzene-cross-linked macroporous polystyrenyl- η^5 -cyclopentadienyl dicarbonyl cobalt reveal limited alkyne oligomerization capability, activity in hydroformylation, and most importantly, Fischer-Tropsch catalysis. Control expts. provide strong evidence for the presence of a defined homogeneous cyclopentadienylcobalt unit in the latter. Since $\text{CpCo}(\text{CO})_2$ is not active under the catalytic conditions, the title compd. constitutes the first example of a polymer supported homogeneous catalyst with novel catalytic activity.

Keywords

Fischer Tropsch catalyst
catalyst polymer supported cyclopentadienylcobalt

Index Entries

Decarbonylation
of polymer-supported cyclopentadienyl cobalt
Hydroformylation catalysts
polymer supported cyclopentadienyl cobalt, for 1-pentene
Hydrogenation catalysts

polymer-supported h⁵-cyclopentadienyl cobalt, for carbon monoxide
71262-00-5, polymers supported
catalysts, for hydrogenation of carbon monoxide
109-67-1
hydroformylation of, catalyst for
630-08-0, reactions
hydrogenation of, catalyst for
71262-01-6, polymers supported
prepn. of

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91:56329

Asymmetric hydrogenation of prochiral olefins using transition metal complexes immobilized in clayey minerals.
Mazzei, Marcello; Riocci, Mario; Marconi, Walter (SNAM Progetti S.p.A., Italy). Ger. Offen. DE 2845216 19 Apr 1979, 11 pp. (German). (Germany). CODEN: GWXXBX. CLASS: IC: C07C103-46.
PRIORITY: IT 77-28666 17 Oct 1977. DOCUMENT TYPE: Patent CA
Section: 23 (Aliphatic Compounds) Section cross-reference(s): 34
The title process is illustrated by the hydrogenation of
PhCH: C(NHAc)CO₂H over [Rh(COD)L]+ClO₄- [COD = cyclooctadiene, L = [(R)-(+)-PhCHMe(Ph₂P)NCH₂]₂] catalyst bound to hectorite to give (R)-(+)-PhCH₂CH(NHAc)CO₂H.

Keywords

asym hydrogenation immobilized rhodium complex
catalyst asym hydrogenation olefin
transition metal complex catalyst hydrogenation
amino acid prepn

Index Entries

Bentonite, uses and miscellaneous
catalysts from rhodium complex and, for asym. hydrogenation of
prochiral olefins
Amino acids, preparation
prepn. of, by asym. hydrogenation of olefinic precursors, catalysts
for
Hydrogenation catalysts
asym., immobilized rhodium complex as, for prochiral olefins
Alkenes, reactions
prochiral, asym. hydrogenation of, catalysts for
5429-56-1
5469-45-4
57222-04-5
asym. hydrogenation of, catalysts for
12173-47-6
12068-50-7
catalysts from rhodium complex and, for asym. hydrogenation of
prochiral olefins
70896-62-7
catalysts, immobilized by clayey support, for asym. hydrogenation
of prochiral olefins
10172-89-1
37466-37-8
57222-06-7
prepn. of

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91:54586

A deactivation study of the immobilized glucose oxidase/catalase system.

Carter, R.; Prenosil, J. E.; Bourne, J. R. (Inst. Technol., ETHZ, Zurich CH-8006, Switz.). Prepr. - Eur. Congr. Biotechnol., 1st, 107-10. DECHEMA: Frankfurt/Main, Ger. (English) 1978. CODEN: 40SBAD. DOCUMENT TYPE: Conference CA Section: 16 (Fermentations) For the prevention of deactivation of the immobilized glucose oxidase [9001-37-0]-catalase [9001-05-2] system in aq. H₂O₂ solns., Ru-based catalysts and MnO₂ gave the best results, although some types of activated C were also satisfactory. The glucose oxidase and catalase were immobilized on MnO₂ by adsorption followed by glutaraldehyde crosslinking. The enzymes were bound to activated C by carbodiimide linkage.

Keywords

deactivation immobilized enzyme prevention
glucose oxidase deactivation prevention
catalase deactivation prevention

Index Entries

1313-13-9, uses and miscellaneous
7440-18-8, uses and miscellaneous
catalyst, immobilized enzyme deactivation prevention by
9001-37-0
immobilized system with catalase, deactivation of, prevention of
9001-05-2
immobilized system with glucose oxidase, deactivation of,
prevention of

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91:54584

Determination and evaluation of mass transfer influence on catalyst efficiency.
Buchholz, K. (DECHEMA, Frankfurt/Main 6000, Fed. Rep. Ger.). Prepr. - Eur. Congr. Biotechnol., 1st, 39-42. DECHEMA: Frankfurt/Main, Ger. (English) 1978. CODEN: 40SBAD. DOCUMENT TYPE: Conference CA Section: 16 (Fermentations) Exptl. results for external mass transfer in fixed beds, in beds with compressible particles, in stirred vessels, and for limitation of the overall reaction by pore diffusion inside the carrier are presented. From these results, an optimization of catalyst design is derived in which the enzyme is fixed only in the outer shell of the particles. This is achieved by taking advantage of diffusion limitation during immobilization; the binding of the enzyme is performed by very rapid adsorption to the matrix, followed by a fast chem. reaction. Thus, the catalyst efficiency is significantly enhanced.

Keywords

mass transfer enzyme catalyst efficiency
immobilized enzyme efficiency mass transfer

Index Entries

Mass transfer
enzyme catalyst efficiency in relation to
Enzymes
immobilized, catalyst efficiency of, mass transfer effect on

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89:60107

Gel-like catalytic systems with immobilized active centers for polymerization of olefins.

Kabanov, V. A.; Smetanyuk, V. I.; Popov, V. G.; Martynova, M. A.; Matyuzheva, V. I. (USSR). Kompleks. Metallorgan. Katalizatory Polimerizatsii Olefinov, (6), 18-23 From: Ref. Zh., Khim. 1978, Abstr. No. 10S185(Russian) 1977. DOCUMENT TYPE: Journal CA Section: 35 (Synthetic High Polymers)
Title only translated.

Keywords

gel catalyst system polymn
active center immobilization polymn
olefin polymn gel catalyst

Index Entries

Polymerization catalysts
gel-like systems, with immobilized active centers, for olefins
Alkenes, polymers
prepn. of, gel-like catalyst systems with immobilized active centers for

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95:192904

Catalysis by supported clusters: chemisorption, decomposition and catalytic properties in Fischer-Tropsch synthesis of carbonyliron (Fe₃(CO)₁₂), carbonylhydroferrate ([HFe(CO)₁₁]-) (and carbonyliron(Fe(CO)₅)) supported on highly divided oxides. Hugues, F.; Bussiere, P.; Basset, J. M.; Commereuc, D.; Chauvin, Y.; Bonneviot, L.; Olivier, D. (Inst. Rech. Catal., CNRS, Villeurbanne 69626, Fr.). Stud. Surf. Sci. Catal., 7(Pt. A, New Horiz. Catal.), 418-31 (English) 1981. CODEN: SSCTDM. ISSN: 0167-2991. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis and Reaction Kinetics)
Section cross-reference(s): 23, 51
Fe(CO)₅, Fe₃(CO)₁₂, and [HFe₃(CO)₁₁]- supported on Al₂O₃ or MgO exhibit, after decompn. under CO + H₂, a very high selectivity for low-mol. wt. olefins. Characterization of the supported complexes before and after decompn. was carried out by using ferromagnetic resonance, Moessbauer, spectroscopy, electron microscopy, and anal. of the gas phase. The behavior of the precursor carbonyl depends on the water content of the support before impregnation: with dehydroxylated alumina and magnesia, thermal decompn. (T < 200°) into superparamagnetic very small metal particles (0 < 15 Å) occurs. Above 200°, sintering to particles of higher sizes occurs to a certain extent. With hydroxylated alumina and magnesia, thermal decompn. leads to a mixt. of superparamagnetic metallic particles and iron oxides. The oxidn. of zero-valent Fe is due to surface protons with evolution of hydrogen. The high selectivities for low-mol. wt. olefins (C₂H₄, C₃H₆) are due to low particle sizes of metallic Fe generated from zero-valent cluster carbonyls.

Keywords

iron carbonyl cluster catalyst immobilized
chemisorption iron carbonyl cluster catalyst
Fischer Tropsch hydrogenation catalyst
decompn adsorbed iron carbonyl cluster
alumina support effect carbonyl decompn
magnesia support effect carbonyl decompn

Index Entries

Chemisorbed substances
iron carbonyl cluster complexes, on oxide supports, thermal decompn. of

Hydrogenation catalysts

iron-oxide support, prepd. by decompn. of carbonyl cluster compds.

Alkanes, preparation

prepn. of, iron-oxide support Fischer-Tropsch catalysts for

Carbonyls

iron, decompn. of, on oxide supports in catalyst prepn.

7439-89-6, uses and miscellaneous

catalysts, for Fischer-Tropsch synthesis prepd. by decompn. of carbonyl cluster complexes on oxide supports

1309-48-4, reactions

1344-28-1, reactions

chemisorbed iron carbonyl cluster complexes on, thermal decompn. of

630-08-0, reactions

hydrogenation of, on iron catalysts prepd. by decompn. of carbonyl cluster complexes

13463-40-6

17685-52-8

55188-22-2

thermal decompn. of, on oxide supports in Fischer-Tropsch catalysts prepn.

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95:79995

Codimerization of ethylene with propylene in the presence of gel-immobilized complex-metal systems.

Lunin, A. F.; Vaizin, Z. S.; Ignatov, V. M.; Smetanyuk, V. I.; Prudnikov, A. I. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, USSR). Neftekhimiya, 21(2), 199-204 (Russian) 1981. CODEN: NEFTAH. ISSN:

0028-2421. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds)

C₂H₄ and C₃H₆ were codimerized to pentenes in the presence of gel-immobilized Ni acetylacetonate, optionally contg. (Me₂CHCH₂)₂AlCl (which retarded isomerization of α-pentenenes). At 20-80°, max. yield (46%) of pentenes was obtained at a C₂H₄-C₃H₆ mol ratio of 1, and the product compn. was essentially independent of monomer ratio. In paraffin hydrocarbons the catalyst system was highly stable.

Keywords

codimerization propene ethene catalyst

dimerization co propene ethene

Index Entries

Dimerization catalysts

co-, nickel acetylacetonate-diisobutylaluminum chloride,

gel-immobilized, for ethene and propene

1779-25-5

catalysts contg., gel-immobilized, for codimerization of ethane and propane

3264-82-2

catalysts, gel-immobilized, for codimerization of ethane and propane

115-07-1, reactions

codimerization of ethene and, catalysts for

74-85-1, reactions

codimerization of propene and, catalysts for

25377-72-4

prepn. of, from ethene and propene by codimerization, catalysts for

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94:187789

Immobilized enzyme catalyst.

Glass, Richard W.; Glogowski, Joseph (CPC International Inc., USA).

U.S. US 4259445 31 Mar 1981, 6 pp. (English). (United States of

America). CODEN: USXXAM. CLASS: IC: C12M011-10;

C12M011-04; B01J031-02. NCL: 435178000. APPLICATION: US

79-44729 1 Jun 1979. DOCUMENT TYPE: Patent CA Section: 7

(Enzymes)

A biocatalytic reactor suitable for the transformation of carbohydrates is prepd. by encapsulating subcellular particulates from vegetable material into a carbohydrate-permeable matrix. Thus, 75 g of the pulp of ripe bananas was dispersed into 250 mL of solns. contg. an entrapping agent, CaCl₂, 1% polyvinylpyrrolidone, and 0.025% cystine-HCl at pH 7.5; the entrapping agents included 1% arginate and 1 or 2% low methoxy pectin. The mixts. were stored overnight at 37° and homogenized in a blender for 1 min. The homogenate was decanted and added dropwise to a 10% CaCl₂ soln., pH 7.5. The beads so formed were dialyzed for 48 h at 4° and poured in columns. The columns prepd. from Kelco arginate beads showed the highest invertase activity with 1% sucrose as substrate (20 mg/dL of glucose formed after 1 h of reaction, 46 mg/dL after 2 h); columns prepd. with Protanol arginate, 1% pectin, and 2% pectin beads yielded 11, 14, and 10 mg/dL glucose after 1 h of reaction and 24, 32, and 24 mg/dL after 2 h, resp.; lower (but significant) activity was obsd. with beads prepd. without antioxidants.

Keywords

vegetable subcellular particulate immobilization carbohydrate
invertase banana subcellular particulate immobilization
amylase banana subcellular particulate immobilization
maltase banana subcellular particulate immobilization
reactor banana subcellular particulate carbohydrate

Index Entries

Carbohydrates, reactions

reaction of, with immobilized banana particulates

Banana

subcellular particulates of, immobilization of

Reactors

biocatalytic, of vegetable subcellular particulates, carbohydrates
transformation by

10043-52-4, biological studies

in vegetable subcellular particulate immobilization

9000-92-4

9001-42-7

9001-57-4

of immobilized banana particulates

57-50-1, reactions

69-79-4

133-89-1

643-13-0

9005-25-8, reactions

reaction of, with immobilized banana particulates

9000-69-5

9005-32-7

vegetable subcellular particulate immobilization with

52-89-1

9002-86-2

vegetable subcellular particulates immobilization in the presence of

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94:102366

Catalytic properties of EIVB-substituted tungsten carbonyl complexes

(EIVB = Ge, Sn) immobilized on a silica support.

Van Linthoudt, J. P.; Delmulle, L.; Van der Kelen, G. P. (Lab. Gen. Inorg. Chem. B, Univ. Gent, Ghent B-9000, Belg.). J. Organomet. Chem., 202(1), 39-48 (English) 1980. CODEN: JORCAI. ISSN: 0022-328X. DOCUMENT TYPE: Journal CA Section: 22 (Physical

Organic Chemistry) Section cross-reference(s): 67

The catalytic activity in olefin disproportionation of a 3,3-dimethyl-1-butene substrate has been investigated for a series of EIVB-W(CO)₃C₅H₅ species (EIVB = Ge, Sn) chem. bonded to a high surface silica carrier. Different product distributions and conversion factors were obtained by thermal and UV activation of the catalysts, whereas variation of the EIVB element had little effect. In all cases, isomerization was obsd. rather than disproportionation, probably because of steric interaction between the bulky Me₃C groups at the active W sites.

Keywords

isomerization catalyst tungsten carbonyl
tin tungsten isomerization catalyst
germanium tungsten isomerization catalyst
dimethylbutene isomerization catalyst

Index Entries

Steric hindrance

in isomerization and disproportionation of alkenes over tungsten germanium or tin carbonyl complexes

Isomerization catalysts

tungsten germanium or tin carbonyl complexes, for dimethylbutene

Carbonyls

tungsten, germanium or tin complexes, isomerization catalysts

76687-45-1, polymer-bound deriv.

76687-46-2, polymer-bound deriv.

catalysts, for isomerization of dimethylbutene

558-37-2

isomerization of, in presence of tungsten tin or germanium carbonyl complexes

12309-21-6

76687-38-2

prepn. and reaction of, with silica support

4984-82-1

reaction of, with hexacarbonyl tungsten

14040-11-0

reaction of, with sodium cyclopentadienide

12107-36-7

reaction of, with tin tetrachloride or germanium tetrachloride

7646-78-8, reactions

10038-98-9

reaction of, with tungsten carbonyl cyclopentadienyl complex

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94:66163

Nature of the promoting action of hydrogen in ethylene polymerization on gel-immobilized metal-complex catalysts.

Baulin, A. A.; Kopylov, V. M.; Ivanchev, S. S.; Smetanyuk, V. I.;

Kabanov, V. A. (Nauchno-Proizvod. Ob'edin. "Plastpolimer",

Leningrad, USSR). Dokl. Akad. Nauk SSSR, 254(2), 385-9 [Phys.

Chem.] (Russian) 1980. CODEN: DANKAS. ISSN: 0002-3264.

DOCUMENT TYPE: Journal CA Section: 35 (Synthetic High Polymers)

Lowering of mol. wt. of polyethylene (I) in the title polymn. by addn. of H was accompanied, at certain range of H concns., by an increase, rather than a decrease, in the polymn. rate. The rate acceleration reflected an increase in the rate of diffusion of I from the gel-supported catalyst to

the ambient solvent; the diffusion constituted a rate-detg. step of the polymn. At higher H concns., regeneration of the catalyst by monomer insertion in the metal-H bond was rate detg.; this insertion rate was slower than the rate of monomer insertion in the metal-copolymer bond.

Keywords

hydrogen promoter ethylene polymn mechanism
kinetics ethylene polymn hydrogen promoter
gel supported complex catalyst polymn
polymn catalyst gel supported ethylene

Index Entries

Kinetics of polymerization
of ethylene on gel-supported complex catalysts, promoting action of
hydrogen in relation to
Polymerization
of ethylene on gel-supported complex catalysts, promoting action of
hydrogen in, mechanism of
Polymerization catalysts
organoaluminum-titanium tetrachloride complexes, on
Grignard-treated graft copolymer supports, polymn. of
ethylene in presence of, promoting action of hydrogen in,
mechanism of
7550-45-0, uses and miscellaneous
catalysts, contg. organoaluminum compds., on Grignard-treated
graft copolymer support, polymn. of ethylene in presence of,
promoting action of hydrogen in, mechanism of
96-10-6, uses and miscellaneous
97-93-8, uses and miscellaneous
1191-15-7
catalysts, contg. titanium tetrachloride, on Grignard-treated graft
copolymer support, polymn. of ethylene in presence of,
promoting action of hydrogen in, mechanism of
27029-51-2, reaction products with Grignard reagents
73681-98-8, reaction products with Grignard reagents
73681-99-9, reaction products with Grignard reagents
73682-00-5, reaction products with Grignard reagents
graft, catalyst support for organoaluminum-titanium tetrachloride
system, polymn. of ethylene in presence of, promoting
action of hydrogen on, mechanism of
1333-74-0, uses and miscellaneous
mol. wt. regulator and polymn. promoter, polymn. of ethylene in
presence of, mechanism of
74-85-1, reactions
polymn. of, in presence of gel-supported complex catalyst,
promoting action of hydrogen in, mechanism of

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94:46426

Activity of an immobilized catalyst in hydrosilylation.
Zaslavskaya, T. N.; Reikhsfel'd, V. O.; Filippov, N. A. (Leningr. Tekhnol.
Inst., Leningrad, USSR). Zh. Obshch. Khim., 50(10), 2286-9 (Russian)
1980. CODEN: ZOKHA4. ISSN: 0044-460X. DOCUMENT TYPE:
Journal CA Section: 22 (Physical Organic Chemistry)
PtCl₆²⁻ immobilized on the anion exchanger, AV 17-8, catalyzed the
hydrosilylation of 1-heptene by Me₂SiHPh (I). The induction period was
decreased and the activity of the catalyst increased by preliminary
treatment with I. The activation process consisted of conversion of
PtCl₆²⁻ to PtCl₄²⁺ with cleavage of PtCl *** HON bonds in the catalyst.

Keywords

hydrosilylation heptene platinate anion exchange

Index Entries

Anion exchangers

catalysts from hexachloroplatinate(2-) and, for hydrosilylation of heptene

Kinetics of hydrosilylation

of heptene with platinum-anion exchanger catalyst

Hydrosilylation catalysts

platinum-anion exchanger, for heptene

16871-54-8

catalysts from anion exchanger and, for hydrosilylation of heptene

766-77-8

hydrosilylation of heptene by, with platinum-anion exchanger

catalyst, kinetics of

592-76-7

hydrosilylation of, with platinum-anion exchanger catalyst, kinetics of

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92:186451

Gel-immobilized catalytic systems.

Kabanov, V. A.; Smetanyuk, V. I.; Prudnikov, A. I. (USSR). Khim.

Prom-st. (Moscow), (11), 656-61 (Russian) 1979. CODEN: KPRMAW.

ISSN: 0023-110X. DOCUMENT TYPE: Journal; General Review CA

Section: 67 (Catalysis and Reaction Kinetics)

A review with 12 refs.

Keywords

review gel immobilized catalytic system

polymn catalyst gel immobilized review

Index Entries

Catalysts and Catalysis

Dimerization catalysts

Polymerization catalysts

gel-immobilized

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92:181854

Functionalization of polymer supports for polymerization catalysts by graft polymerization methods.

Kritskaya, D. A.; Pomogailo, A. D.; Ponomarev, A. N.; Dyachkovskii, F.

S. (Inst. Chem. Phys., Chernogolovka 142432, USSR). J. Appl. Polym.

Sci., 25(3), 349-57 (English) 1980. CODEN: JAPNAB. ISSN:

0021-8995. DOCUMENT TYPE: Journal CA Section: 35 (Synthetic

High Polymers) Section cross-reference(s): 67

Olefin polymers were grafted with allyl alc., allylamine, diallylamine, and allyl sulfide by gas-phase polymn. initiated by electron beam or plasma activation, giving radiation yields close to those obtained in the grafting of liq. monomers. The kinetics of Me methacrylate and acrylic acid grafting on polyethylene pretreated with He discharge plasma was also studied, and it was shown that 10 min plasma exposure gave graft post-polymn. approx. equiv. to a g-radiation dose of 0.4-0.5 Mrad. The amt. of grafted polymer reached 6-10% wt. during the 1st 1-2 h of the plasma-initiated polymn., and the grafting rate dropped to 1-2%/h. The allyl-grafted olefin polymers were used to immobilize Ti and V compds. for use as supported polymn. catalysts. The extent of reaction in the immobilization varied from 0.1 to 0.96, and depended on both the nature of the transition metal and the type of grafted functional groups.

Keywords

grafted polyethylene catalyst support
titanium polymn catalyst immobilization
vanadium polymn catalyst immobilization

Index Entries

Polymerization
graft, plasma, of functional monomers on polyolefins
Polymerization
graft, radiochem., of functional monomers on polyolefins
Polymerization catalysts
immobilized, transition metals, functional grafted polymers for
prepn. of
25101-13-7
25822-09-7
26338-34-1
26355-12-4
28550-69-8
53761-72-1
61988-36-1
62197-35-7
73501-90-3, reaction products with titanium and vanadium compds.
73501-92-5
graft, prepn. of, for immobilization of polymn. catalysts
1271-19-8, reaction products with functional graft polymers
1686-22-2, reaction products with functional graft polymers
5593-70-4, reaction products with functional graft polymers
7550-45-0, reaction products with functional graft polymers
7632-51-1, reaction products with functional graft polymers
7727-18-6, reaction products with functional graft polymers
9010-77-9, reaction products with titanium and vanadium compds.
24937-78-8, reaction products with titanium and vanadium compds.
25119-62-4, reaction products with titanium and vanadium compds.
25134-58-1, reaction products with titanium and vanadium compds.
26355-13-5, reaction products with titanium and vanadium compds.
28550-72-3, reaction products with titanium and vanadium compds.
62197-34-6, reaction products with titanium and vanadium compds.
62197-35-7, reaction products with titanium and vanadium compds.
73501-91-4, reaction products with titanium and vanadium compds.
immobilized catalysts, for polymn.

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92:47829

Study of immobilized catalysts. I. Study of magnetic properties and x-ray photoelectronic spectra of cobalt complexes fixed on polymer supports.

Ivleva, I. N.; Pomogailo, A. D.; Echmaev, S. B.; Ioffe, M. S.; Golubeva, N. D.; Borod'ko, Yu. G. (Otd. Inst. Khim. Fiz., Chernogolovka, USSR).

Kinet. Katal., 20(5), 1282-9 (Russian) 1979. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis

and Reaction Kinetics) Section cross-reference(s): 35, 77

A series of Co complexes, grafted on surfaces of polyethylene or polypropylene, was studied by ESCA and by detg. magnetic permeability. Poly(acrylic acid), poly(4-vinylpyridine), and polyvinylimidazole were used as grafted ligands. The oxidn. state of Co²⁺ did not change when fastened on the surfaces; however, when the compds. were used as catalysts in isoprene polymn. a redn. to diamagnetic Co¹⁺ was obsd. When reduced to metallic Co, the catalyst lost its activity.

Keywords

cobalt catalyst grafted polymer surface

Index Entries

Polymerization catalysts
cobalt complex, grafted on polymer, magnetic properties. and
ESCA study of
Magnetic permeability
of cobalt ion on grafted polymer support, catalytic activity in relation
to
Kinetics of polymerization
of isoprene, with polymer-linked cobalt catalysis
Photoelectron spectroscopy
x-ray, of cobalt ion on grafted polymer support, catalytic activity in
relation to
9002-88-4, grafted with poly(acrylic acid), poly(4-vinylpyridine), or
polyvinylimidazole
as catalyst support for cobalt ion, structure and properties of
9003-07-0, grafted with polymers of acrylic acid, vinylpyridine, or
vinylimidazole
catalyst, contg. cobalt ion, structure and properties of polymn.
7440-48-4, surface complex on grafted polymer
catalyst, magnetic properties. and ESCA study of
7440-48-4, surface complex on grafted polymers
fixed catalysts, redn. of, in catalysts of isoprene polymn.
78-79-5, reactions
polymn. of, kinetics of catalytic

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92:40918

Synthesis, catalytic activity, and behavior of phase-transfer catalysts
supported on silica gel. Strong influence of substrate adsorption on
the polar polymeric matrix on the efficiency of the immobilized
phosphonium salts.

Tundo, Pietro; Venturello, Paolo (Ist. Chim. Org., Univ. Torino, Turin
10125, Italy). J. Am. Chem. Soc., 101(22), 6606-13 (English) 1979.

CODEN: JACSAT. ISSN: 0002-7863. DOCUMENT TYPE: Journal

CA Section: 22 (Physical Organic Chemistry) Section

cross-reference(s): 67

Phase-transfer catalysts composed of phosphonium salts immobilized
on silica gel with different spacer chain lengths between the polymeric
matrix and the catalytic center (from 3 to 27 atoms) were prepd.

Ketone adsorption consts. on nonfunctionalized and functionalized
silica gel, and their comparison with pseudo-first-order rate consts. in
the aq. NaBH₄ redn. of ketones under phase-transfer conditions, show
that adsorption phenomena are the main factors detg. the reaction rate.

C,O-Alkylation expts. show that the catalyzed reaction takes place in a
very polar environment formed by the functionalized silica gel and the
water adsorbed on it. These immobilized catalysts can be reused
several times with a little loss of activity, but they are hydrolyzed at high
pH.

Keywords

phosphonium silica phase transfer catalyst
ketone redn phosphonium silica
substitution catalyst phosphonium silica
alkylation catalyst phosphonium silica
adsorption phosphonium silica catalyst

Index Entries

Adsorption

effect of, on catalytic activity of phosphonium-silica gel
 phase-transfer catalysts
 Substitution reaction catalysts
 phosphonium-modified silica gel
 Reduction catalysts
 phosphonium-modified silica gel, for ketones
 Alkylation catalysts
 phosphonium-modified silica gel, for phenoxide
 Silica gel, compounds
 phosphonium-modified, as phase-transfer catalysts
 Ketones, reactions
 redn. of, with phosphonium-modified silica gel catalysts, kinetics of
 Catalysts and Catalysis
 phase-transfer, phosphonium-modified silica gel as
 100-39-0
 alkylation of phenoxide by, phosphonium-silica phase-transfer
 catalysts for
 139-02-6
 alkylation of, by benzyl bromide, phosphonium-silica gel
 phase-transfer catalysts for
 919-30-2
 52090-18-3
 prepn. and reaction with silica gel
 998-40-3, reaction products with modified silica gels, as phase-transfer
 catalysts
 prepn. of
 2486-07-9
 2486-09-1
 prepn. of, phase-transfer catalysts for
 64-17-5, reactions
 reaction of, with (bromopropyl)trichlorosilane
 15486-96-1
 15949-84-5
 reaction of, with aminopropyl-modified silica gel
 1074-82-4
 reaction of, with bromoundecanamidopropyl-modified silica gel
 13883-39-1
 reaction of, with ethanol
 302-01-2, reactions
 reaction of, with phthalimido-modified silica gel
 75-97-8
 98-86-2, reactions
 102-04-5
 111-13-7
 830-13-7
 redn. of, with phosphonium-silica gel phase-transfer catalysts,
 adsorption effect on
 7681-11-0, reactions
 substitution reaction of, with bromooctane, phosphonium-silica gel
 phase-transfer catalysts for
 3111-52-2
 substitution reaction of, with chlorodinitrobenzene,
 phosphonium-silica gel phase-transfer catalysts for
 111-83-1
 substitution reaction of, with iodide, phosphonium-silica gel
 phase-transfer catalysts for
 97-00-7
 substitution reaction of, with thiophenoxide, phosphonium-silica gel
 phase-transfer catalysts for

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91:195535

Study of the catalytic properties of immobilized platinum.

Belyi, A. S.; Duplyakin, V. K.; Fomichev, Yu. V.; Demenkova, E. P.;

Levinter, M. E. (Kuibyshev. Politekh. Inst., Kuibyshev, USSR). Katal. Konversiya Uglevodorodov, 4, 29-33 (Russian) 1979. CODEN: KKUGDV. ISSN: 0130-2132. DOCUMENT TYPE: Journal CA
Section: 51 (Fossil Fuels, Derivatives, and Related Products) Section cross-reference(s): 67

A gasoline reforming catalyst contg. 0.6% Pt deposited on an Al₂O₃ support and 3.3% Sn, which immobilizes the Pt, was studied in the dehydrogenation of cyclohexane [110-82-7] and methylcyclohexane [108-87-2]. The addn. of Sn to the catalyst improved significantly its dehydrogenation properties.

Keywords

platinum catalyst reforming dehydrogenation
tin platinum dehydrogenation catalyst
cyclohexane dehydrogenation catalyst
methylcyclohexane dehydrogenation catalyst

Index Entries

Dehydrogenation catalysts
platinum-tin, for cyclohexane and methylcyclohexane
Petroleum refining catalysts
reforming, platinum, tin effect on dehydrogenating activity of
7440-31-5, uses and miscellaneous
catalysts, contg. platinum, for dehydrogenation of cyclohexane and methylcyclohexane
7440-06-4, uses and miscellaneous
catalysts, for gasoline reforming, tin effect on dehydrogenating activity of
108-87-2
110-82-7, reactions
dehydrogenation of, catalysts for

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90:122135

Comparative analysis of homogeneous and heterogenized cobalt systems in the polymerization of diene monomers.
Golubeva, N. D.; Pomogailo, A. D.; Kuzaev, A. I.; Ponomarev, A. N.; D'yachkovskii, F. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Dokl. Akad. Nauk SSSR, 244(1), 89-93 [Chem.] (Russian) 1979. CODEN: DANKAS. ISSN: 0002-3264. DOCUMENT TYPE: Journal CA
Section: 35 (Synthetic High Polymers)
The polymn. of isoprene (I) [78-79-5] or butadiene [106-99-0] in the presence of CoCl₂.(Py)₂-Et₂AlCl or heterogeneically on polymeric supports, i.e., immobilized CoCl₂-Et₂AlCl, takes place on similar reactive sites, but the immobilization of the catalyst facilitates control over the formation and deactivation of reactive sites. The polymn. rate const. and activation energy of polymn. of I are higher in the presence of the homogeneous system than in the presence of the heterogeneous one. Catalyst deactivation is inhibited in the heterogeneous system, leading to increased yield of polybutadiene (II) [9003-17-2]. Also, the mol. wt. of II prepd. on the immobilized system is considerably higher than in the presence of the homogeneous one. The heterogeneous system increases the fraction of cis-1,4 units in both II and polyisoprene [9003-31-0] by 2-11%, even though the microstructure of the polymers is almost identical.

Keywords

isoprene polymn kinetics cobalt catalyst
butadiene polymn kinetics cobalt catalyst
polymeric support diene polymn
polybutadiene stereoregularity cobalt catalyst

polyisoprene stereoregularity cobalt catalysts
ethylaluminum chloride cobalt catalysts
ethylaluminum chloride catalysts diene polymn

Index Entries

Polymerization catalysts
cobalt chloride dipyridinyl-diethylaluminum chloride immobilized
on polymeric support, for butadiene and isoprene
Kinetics of polymerization
of diene monomers, cobalt system catalysts effect on
96-10-6, uses and miscellaneous
14024-92-1
catalysts, for polymn. of diene monomers
9010-77-9, cobalt complexes
26355-13-5, cobalt complexes
69546-09-4, cobalt complexes
graft, catalysts, for polymn. of diene monomers
78-79-5, reactions
106-99-0, reactions
polymn. of, catalyst effect on kinetics of
9003-17-2
9003-31-0
stereoregularity of, cobalt system catalysts effect on

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89:90344

Synthesis of immobilized catalysts for the polymerization of olefins on polymer supports.

Pomogailo, A. D.; Lisitskaya, A. P.; Gor'kova, N. S.; Kritskaya, D. A.; Ponomarev, A. N.; D'yachkovskii, F. S. (USSR). Kompleks.

Metalloorgan. Katalizatory Polimerizatsii Olefinov, (6), 13-18 From:

Ref. Zh., Khim. 1978, Abstr. No. 12S138(Russian) 1977. DOCUMENT

TYPE: Journal CA Section: 35 (Synthetic High Polymers)

Title only translated.

Keywords

immobilized catalyst olefin polymn

Index Entries

Polymerization catalysts
immobilized, on polymer supports, for olefins
Alkenes, reactions
polymn. of, immobilized catalysts on polymer supports for

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88:192228

Easy and economical synthesis of widely porous resins; very efficient supports for immobilized phase-transfer catalysts.

Tundo, Pietro (Ist. Chim. Org., Univ. Torino, Turin, Italy). Synthesis, (4), 315-16 (English) 1978. CODEN: SYNTBF. ISSN: 0039-7881.

DOCUMENT TYPE: Journal CA Section: 37 (Plastics Fabrication and Uses) Section cross-reference(s): 67, 23, 25

Long-life active catalysts for phase transfer reactions were obtained by addn. via the Friedel-Crafts reaction of a bromoethane group to polystyrene [9003-53-6] rings followed by treatment with a trialkylphosphine to give the phosphonium bromide moiety. The catalyst was used for such phase transfer reactions as prepn. of 1-iodooctane [629-27-6] from 1-bromooctane [111-83-1] and KI in high yield and purity, the catalyst being removed by simple filtration.

Keywords

polystyrene phosphonium halide catalyst
phase transfer catalyst polystyrene

Index Entries

Catalysts and Catalysis

immobilized alkylphosphonium halides, for phase transfer reactions
9003-53-6, reaction products with 1,6-dibromohexane, tributylphosphonium bromide derivs.
catalysts, for phase transfer reactions
629-27-6
2243-27-8
13910-16-2
54929-04-3
prepn. of, catalysts for, immobilized alkyl phosphonium halides as
103-79-7
reaction of, with bromobutane
3111-52-2
reaction of, with bromooctane, catalysts for
109-65-9
reaction of, with phenylpropanone
111-83-1
reaction of, with potassium iodide, catalysts for

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88:21436

The structures and hydroformylation catalytic activities of polyphosphine complexes of rhodium(I), and related complexes immobilized on polymer supports.

Sanger, Alan R.; Schallig, Leslie R. (Alberta Res. Counc., Edmonton, Alberta, Can.). J. Mol. Catal., 3(1-3), 101-9 (English) 1977. CODEN: JMCADS. DOCUMENT TYPE: Journal CA Section: 21 (General Organic Chemistry) Section cross-reference(s): 67, 35

The structures and the hydroformylation catalytic activity of complexes of Rh(I) with di- or triphosphines, or with tertiary phosphine anchor-sites on polymers, have been studied. Substitution of one PPh₃ ligand of the parent complex, RhH(CO)₂(PPh₃)₂, by one phosphine group of a di- or triphosphine gives a bridged complex of higher catalytic activity than the parent complex, but substitution for all PPh₃ ligands gives a complex of lower activity. Immobilization of Rh(I) at phosphine anchor-sites on polymeric supports gives square-planar or trigonal-bipyramidal complexes in which Rh(I) is coordinated to one or a max. of 2 anchor-sites. The square-planar bis(phosphine) complexes are normally trans. The structures adopted by these systems depend upon (a) the sepn. between anchor-sites, and (b) the flexibility of the side-chain contg. the anchor-site.

Keywords

hydroformylation catalyst rhodium polymer
polystyrene phosphinated rhodium catalyst
hexene hydroformylation catalyst

Index Entries

Kinetics of hydroformylation
of alkenes, catalytic

Hydroformylation catalysts
rhodium phosphine complexes on polymers, for alkenes
Siloxanes and Silicones, reactions
methyl phenyl, reaction of, with chloromethyl Me ether

1079-66-9, reaction product with poly(vinyl chloride)
 catalyst support for rhodium phosphine hydroformylation catalysts
 9002-89-5, reaction product with chlorodiphenylphosphine
 9003-53-6, phosphinated
 catalysts support, for rhodium phosphine hydroformylation catalysts
 12092-47-6
 14694-95-2
 17185-29-4
 20936-09-8
 22172-51-6
 65187-06-6
 65286-22-8
 catalysts, on polymer support, for hydroformylation
 78-94-4, reactions
 100-42-5, reactions
 108-05-4, reactions
 110-83-8, reactions
 513-42-8
 592-41-6, reactions
 592-43-8
 695-12-5
 hydroformylation of, support of catalysts for
 9002-89-5
 reaction of, with chlorodiphenylphosphine
 107-30-2
 reaction of, with methyltriphenylsilicone
 644-97-3
 1079-66-9
 reaction of, with poly(vinyl alc.)
 22031-12-5
 reaction of, with rhodium phosphine complex

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87:118095

Immobilized complex catalysts on polymers.
 Mizoroki, Tsutomu (Res. Lab. Resour. Util., Tokyo Inst. Technol.,
 Tokyo, Japan). Sekiyu Gakkai Shi, 19(6), 455-9 (Japanese) 1976.
 CODEN: SKGSAE. DOCUMENT TYPE: Journal; General Review CA
 Section: 35 (Synthetic High Polymers)
 A review with 37 refs. on prepn. and properties of complex catalysts
 immobilized on org. or inorg. polymers.

Keywords

review complex catalyst
 immobilization catalyst polymer review

Index Entries

Polymers, uses and miscellaneous
 complex catalysts immobilized by, prepn. and properties of
 Catalysts and Catalysis
 polymer-immobilized complex, prepn. and properties of

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87:80459

Optimal catalyst distribution in a dual enzyme sequential system.
 Choi, C. Y.; Perlmutter, D. D. (Dep. Chem. Biochem. Eng., Univ.
 Pennsylvania, Philadelphia, Pa., USA). AIChE J., 23(3), 319-26
 (English) 1977. CODEN: AICEAC. DOCUMENT TYPE: Journal CA
 Section: 7 (Enzymes)
 The dual enzyme sequential reactions that decompose arginine to NH₃
 were investigated exptl. to det. appropriate rate equations and to test

predictions of optimal distribution of the 2 enzymes (arginase and urease) immobilized in a packed-bed reactor. The kinetics of this system were of the kind that calls for a bang-bang control with a well-defined switching point between the 2 immobilized enzyme catalysts. At low values of reactor residence time, the optimum switching point approaches a limiting position which depends on the kinetic order of the 2nd reaction. In the higher ranges of residence time, the switching point moves into the latter half of the reactor, but exceptions to this generalization are found when Michaelis-Menten kinetics are applicable to both reactions. For the special circumstance where the 2 reactions are of zero and 1st order, resp., the optimal distribution of the 2 catalysts is independent of the 1st rate const. The exptl. results are, in general, consistent with these expectations, and secondary deviations are discussed. A suboptimal policy alternative is also treated anal. and tested by expt.

Keywords

arginase urease kinetics immobilized
reactor arginase urease kinetics

Index Entries

Kinetics, enzymic
of arginase and urease, in immobilized reactor
Simulation model
of arginase-urease reactor kinetics
Reactors
biocatalytic, optimal arginase and urease distribution in
9002-13-5
reactor contg. immobilized arginase and, reaction kinetics of
9000-96-8
reactor contg. immobilized urease and, reaction kinetics of

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94:103860

Synthesis and catalytic properties of transition-metal complexes immobilized on macromolecular supports in polymerization processes.

Dyachkovskii, F. S.; Pomogailo, A. D. (Inst. Chem. Phys., Moscow, USSR). J. Polym. Sci., Polym. Symp., 68, 97-108 (English) 1981. CODEN: JPYCAQ. ISSN: 0360-8905. DOCUMENT TYPE: Journal; General Review CA Section: 35 (Synthetic High Polymers) A review with 21 refs.

Keywords

review transition metal catalyst support
macromol support metal catalyst review
polymn catalyst transition metal review

Index Entries

Transition metals, uses and miscellaneous
catalysts, immobilization of, on polymer supports
Polymers, uses and miscellaneous
supports, for transition metal catalysts
Polymerization catalysts
transition metals, polymer supports for

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94:26796

Catalyst deactivation and optimal operation policy: immobilized

b-galactosidase.

Prenosil, J. E.; Peter, J.; Bourne, J. R. (Tech. Chem. Lab., ETHZ, Zurich, Switz.). Enzyme Eng., 5, 317-20 (English) 1980. CODEN: ENENDT. ISSN: 0094-8500. DOCUMENT TYPE: Journal CA

Section: 7 (Enzymes) Section cross-reference(s): 16

A fixed-bed enzyme reactor system for isothermal operation and const. flow rate is suggested in which small conversion fluctuations exist. The catalyst is sequentially charged in each reactor after a given operating period which depends on the rate of deactivation and the tolerable limits of conversion fluctuations. Using b-galactosidase from *Aspergillus niger* immobilized on Dulite S-761, the activity in the reactor was calcd. from kinetic data applied in an appropriate reactor model. The period between 2 successive catalyst charges was evaluated for various limits of fluctuations in conversion as a function of initial conversion. When operating at const. flow rate, the conversion and thereby the prodn. decreases much slower than in a process operated with const. conversion. Thus, when small conversion fluctuations can be tolerated, the const. flow process offers more total prodn. and simpler operation than the const. conversion process.

Keywords

galactosidase beta reactor operation
enzyme reactor optimal operation
immobilized beta galactosidase reactor

Index Entries

Reactors

biocatalytic, enzyme deactivation in, operational minimization of

Enzymes

reactors, deactivation of, minimization of

9031-11-2

immobilized, in biocatalytic reactors, deactivation of, minimization of

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92:181930

Catalysts of racemization of optically active amino acids from salicylic anhydride and its analogs immobilized on ion-exchange resins.

Yamskov, I. A.; Tikhonov, V. E.; Davankov, V. A.; Ryzhov, M. G.; Vel'ts, A. A.; Vauchskii, Yu. P. (Inst. Elementoorg. Soedin., Moscow, USSR).

Vysokomol. Soedin., Ser. A, 22(1), 71-6 (Russian) 1980. CODEN:

VYSAAF. ISSN: 0507-5475. DOCUMENT TYPE: Journal CA Section:

36 (Plastics Manufacture and Processing)

The title catalysts were prepd. by Friedel-Crafts acylation of salicylaldehyde or nitrophenol (I) with acid-contg. polymers or by Menshutkin alkylation of amine-contg. polymers with chloromethylsalicylaldehyde. The catalysts were hydrolytically stable, contained 1.1-1.9 mmol/g CHO group or I residue, and exhibited high activity in the racemization of lysine [56-87-1], valine [72-18-4], alanine [56-41-7], and glutamic acid [56-86-0]. The alkylated amine-contg. polymers exhibited the highest catalytic activity but were less stable than the acylated catalysts.

Keywords

salicylaldehyde immobilization ion exchanger
nitrophenol immobilization ion exchanger
racemization catalyst immobilized salicylaldehyde
amino acid racemization catalyst

Index Entries

Amino acids, uses and miscellaneous
 racemization catalysts for, salicylaldehyde or nitrophenol reaction
 products with ion exchangers as
 Epoxy resins, uses and miscellaneous
 reaction products with chloromethylsalicylaldehyde, racemization
 catalysts, for amino acids
 Racemization catalysts
 salicylaldehyde or nitrophenol reaction products with ion
 exchangers, for amino acids
 Ion exchangers
 salicylaldehyde or nitrophenol reaction products with, for
 racemization catalysts for amino acids
 56-41-7, uses and miscellaneous
 56-86-0, uses and miscellaneous
 56-87-1, uses and miscellaneous
 72-18-4, uses and miscellaneous
 racemization catalysts for, salicylaldehyde and nitrophenol reaction
 products with ion exchangers as
 88-75-5, reaction product with KB-1 ion exchanger
 90-02-8, reaction products with ion exchange resins
 100-02-7, reaction products with poly(acryloyl chloride), hydrolyzed
 141-43-5, reaction products with chloromethylated
 divinylbenzene-styrene copolymer and chloromethylsalicylaldehyde
 9003-53-6, chlorosulfonated, reaction products with salicylaldehyde,
 hydrolyzed
 9003-70-7, chloromethylated, reaction products with ethanolamine and
 chloromethylsalicylaldehyde
 11138-33-3, reaction products with salicylaldehyde
 23731-06-8, reaction products with amine-contg. ion exchangers
 25189-84-8, reaction products with nitrophenol, hydrolyzed
 73467-50-2, reaction products with chloromethylsalicylaldehyde
 racemization catalysts, for amino acids

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92:179090

Enzymic conversion of steroids.

Dunnill, Peter; Lilly, Malcolm Douglas (Engl.). Brit. GB 1555004 7 Nov
 1979, 4 pp. (English). (United Kingdom). CODEN: BRXXAA. CLASS:

IC: C07J001-00; C07J007-00; C07J009-00; C07G007-02.

APPLICATION: GB 75-8020.26 Feb 1975. DOCUMENT TYPE:

Patent CA Section: 16 (Fermentations) Section cross-reference(s): 32

The OH group of steroids was oxidized to an oxo group by reaction with
 O in a medium contg. 3 50% vol. of a water-immiscible org. liq. in the
 presence of Nocardia or Mycobacterium, or enzymes from these
 microorganisms immobilized on a carrier. Thus, cholesterol in CCl4
 was oxidized at 20° with O (sparged in at 100 mL/min) in the presence
 of Nocardia NCIB 10554. The cholesterol was quant. converted to
 cholest-4-en-3-one at an initial rate of 7 g/h and complete conversion
 was reached in 5.5 h.

Keywords

hydroxy steroid oxidn enzyme catalyst
 cholesterol oxidn oxygen enzyme catalyst
 microorganism oxidn sterol
 sterol oxidn oxygen enzyme catalyst

Index Entries

Mycobacterium

Nocardia

oxidn. by, of sterols

Steroids, reactions

hydroxy, oxidn. of, by enzymes or microorganisms

9028-76-6
 immobilized, cholesterol oxidn. by
 53-43-0
 57-88-5, reactions
 145-13-1
 387-79-1
 oxidn. of, by enzymes or microorganisms
 63-05-8
 prepn. of, by enzymic or microbial oxidn. dehydroepiandrosterone
 68-96-2
 prepn. of, by enzymic or microbial oxidn. hydroxypregnenolone
 63-05-8
 601-57-0
 897-06-3
 prepn. of, by enzymic or microbial oxidn. of cholesterol
 57-83-0, preparation
 prepn. of, by enzymic or microbial oxidn. of pregnenolone

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90:85182
 Immobilized microbial cells as industrial catalysts.
 Vandamme, E. J. (Lab. Alg. Ind. Microbiol., Rijksuniv. Gent, Ghent, Belg.). Natuurwet. Tijdschr. (Ghent), Volume Date 1977, 59(4), 129-54 (Dutch) 1978. CODEN: NATGAK. ISSN: 0369-3368. DOCUMENT TYPE: Journal; General Review CA Section: 16 (Fermentations)
 A review, with 77 refs., on the com. application of immobilized and stabilized cells as catalysts. The immobilization of cell particles and the extra binding of enzymes on microbial cells and their potential applications are discussed.

Keywords

review immobilized microorganism catalyst

Index Entries

Microorganism
 as industrial catalysts
 Reactors
 biocatalytic, immobilized microbial cells in

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89:159213
 Production of natural amino acids using bioorganic catalysts.
 Yakovleva, V. I. (USSR). Itogi Nauki Tekh.: Biol. Khim., 12, 140-52 (Russian) 1978. CODEN: INBKBD. DOCUMENT TYPE: Journal; General Review CA Section: 7 (Enzymes) Section cross-reference(s): 16, 34
 A review with 35 refs. of the prepn. of L-amino acids using immobilized enzymes or microbial cells.

Keywords

amino acid prodn bioorg catalyst review
 enzyme immobilization amino acid prodn review
 microorganism immobilization amino acid prodn review

Index Entries

Enzymes
 immobilized, in amino acid preps.
 Amino acids, preparation
 prepn. of, immobilized enzymes and microbial cells in

Microorganism
immobilized, in amino acid preps.

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89:19101

Optimal concentration profiles for bifunctional catalysts with
Langmuir-Hinshelwood kinetics and varying effectiveness factors.

Chang, Ho Nam (Dep. Chem. Eng. Nucl. Eng., Iowa State Univ., Ames,
Iowa, USA). Proc. Annu. Biochem. Eng. Symp., 5, 18-27 (English)
1975. CODEN: PABSDP. DOCUMENT TYPE: Journal CA Section: 7

(Enzymes)

Langmuir-Hinshelwood kinetic equations were developed for the
sequential reactions catalyzed by 2 enzymes in a reaction sequence
which are present in a mixed-bed biocatalytic reactor. Using the max.
principle of L. S. Pontryagin et al. (1962), the conditions for max. amt.
of C produced in the reaction sequence $A > B > C$ and the min. amt. of
A unreacted were detd. Optimal concn. profiles were calcd. for the
relative amt. of enzyme catalyzing the 1st reaction compared that for
the 2nd reaction in the sequence, and the effect of pore diffusion
limitation is shown.

Keywords

enzyme kinetics bifunctional reactor
immobilization enzyme kinetics bifunctional
model enzyme kinetics bifunctional

Index Entries

Kinetics, enzymic
for bifunctional immobilized enzymes optimization
Simulation model
for enzyme kinetics, in bifunctional immobilized catalyst
optimization
Reactors
biocatalytic, immobilized enzyme kinetics in, model for bifunctional

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88:117028

Kinetics and optimal catalyst distribution in an immobilized-enzyme
tubular reactor.

Choi, Cha Yong (Univ. Pennsylvania, Philadelphia, Pa., USA). 221 pp.
Avail. Univ. Microfilms Int., Order No. 7730183 From: Diss. Abstr. Int. B
1978, 38(8), 3785 (English) 1977. DOCUMENT TYPE: Dissertation
CA Section: 7 (Enzymes)
Abstract Unavailable

Keywords

enzyme immobilization tubular reactor
arginase immobilization tubular reactor
urease immobilization tubular reactor

Index Entries

Kinetics, enzymic
of arginase-urease immobilized deriv.
Reactors
biocatalytic, tubular, arginase and urease immobilization in
9000-96-8
9002-13-5
immobilized, in tubular reactor, kinetics and optimal distribution of

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88:61144

Catalyst for biochemical reactions.

(Grace, W. R., and Co., USA). Fr. Demande FR 2323698 8 Apr 1977, 18 pp. Addn. to Fr. Demande 2,187,836. (French). (France). CODEN: FRXXBL. CLASS: IC: C07G007-02. APPLICATION: FR 73-14190 18 Apr 1973. DOCUMENT TYPE: Patent CA Section: 16 (Fermentations) Enzymes are immobilized by binding to a polyurethane-type polymer. Thus, 100 g ethylene glycol [107-21-1] was mixed with 282 g toluene diisocyanate [26471-62-5] at 65°. When the mixt. became clear, it was cooled to 4° and 100 mL of a fermn. broth contg. cellulase [9012-54-8] was added with const. stirring. When the foam had formed, after ~13 min, it was washed with water and ready to use.

Keywords

enzyme immobilization polyurethane foam

Index Entries

Enzymes

immobilization of

61-33-6, reactions

aminopenicillanic acid manuf. from, with immobilized enzyme

65455-64-3

enzymes immobilization on

9002-07-7

9012-54-8

9031-11-2

9032-08-0

9032-75-1

9055-00-9

immobilization of

9014-06-6

immobilized, aminopenicillanic acid manuf. with

551-16-6

manuf. of, with immobilized enzyme

56-81-5, biological studies

57-55-6, biological studies

77-99-6

107-21-1, biological studies

115-77-5, biological studies

25322-68-3

26471-62-5

polymer contg., enzymes immobilization on

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87:21649

On the potential of soluble and immobilized enzymes in synthetic organic chemistry.

Jones, J. Bryan (Dep. Chem., Univ. Toronto, Toronto, Ont., Can.).

Methods Enzymol., 44(Immobilized Enzymes), 831-44 (English) 1976.

CODEN: MENZAU. DOCUMENT TYPE: Journal; General Review CA

Section: 21 (General Organic Chemistry) Section cross-reference(s): 7

A review with 21 refs.

Keywords

review org synthesis enzyme catalyst

Index Entries

Enzymes

immobilized, potential in synthetic org. chem.
 Synthesis
 potential of immobilized enzymes in

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87:18168

Carrier-bound .alpha.-chymotrypsin - catalyst effectiveness and influence on enzyme kinetic parameters.

Halwachs, W. (Inst. Tech. Chem., Tech. Univ. Hannover, Hannover, Ger.). *Chimia*, 31(3), 114-16 (German) 1977. CODEN: CHIMAD.

DOCUMENT TYPE: Journal CA Section: 7 (Enzymes)

The effectiveness of immobilized chymotrypsin in the hydrolysis of L- and DL-phenylalanine Me ester ranges between 10 and 30% and is a function of substrate concn. This is due to an increase in the kinetic parameters, K_m and K_s , for immobilized enzyme. The apparent kinetic parameters (K_{mapp} and K_{sapp}) are characterized by the Thiele model parameter, ϕ_0 ; when there is no substance transport inhibition in the reactor ($\phi_0 = 0$), $K_{sapp} = K_s$.

Keywords

chymotrypsin immobilized kinetics

Index Entries

Kinetics, enzymic

Michaelis constant

of chymotrypsin immobilized deriv.

9004-07-3

immobilized, reaction kinetics and efficiency of

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95:81728

Tributylborane-initiated graft copolymerization of methyl methacrylate onto pepsin and application of the graft copolymers to an immobilized enzyme.

Kojima, Kuniharu; Tamura, Shigeru; Katsura, Yoshiro; Yoshikuni, Masako (Fac. Eng., Chiba Univ., Chiba 260, Japan). *Kobunshi Ronbunshu*, 38(1), 1-7 (Japanese) 1981. CODEN: KBRBA3.

DOCUMENT TYPE: Journal CA Section: 35 (Synthetic High Polymers)

The graft copolymn. of Me methacrylate on pepsin with Bu₃B [122-56-5] initiator is accelerated by pepsin in the initial stage of polymn. The total conversion and percentage of grafting increased with increasing pepsin content. The optimum concns. of Bu₃B and Me methacrylate for grafting are detd. The total conversion increases with increasing temp. The percentage of grafting attains a max. at ~40°. The overall activation energy is ~5.5 kcal/mol. The uses of the graft copolymers contg. the immobilized enzyme are discussed.

Keywords

polymn graft methacrylate pepsin

grafting methyl methacrylate pepsin

borane catalyst grafting methacrylate

butylborane catalyst grafting methacrylate

Index Entries

Polymerization

graft, of Me methacrylate on pepsin

Polymerization catalysts

graft, tributylborane, for Me methacrylate on pepsin

122-56-5

catalysts, for graft polymn. of Me methacrylate on pepsin
78692-19-0
graft, prepn. of, with tributylborane catalysts

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95:49948

Capillary columns with immobilized stationary phases. I. A new simple preparation procedure.

Grob, K.; Grob, G.; Grob, K., Jr. (GC-Lab., ETH Zurich, Dubendorf 8600, Switz.). J. Chromatogr., 211(2), 243-6 (English) 1981. CODEN: JOCRAM. ISSN: 0021-9673. DOCUMENT TYPE: Journal CA

Section: 66 (Surface Chemistry and Colloids)

An org. peroxide (e.g. dibenzoyl peroxide) is used to initiate immobilization of silicones on the surface of glass capillary columns (preferably persilanized or fused silica columns). The treated columns are then conditioned by applying carrier gas at a high flowrate, heating to 100° at low flowrate with gradual temp. increase, followed by cooling at a high flowrate.

Keywords

gas chromatog coated capillary column
silicone coating capillary chromatog column
peroxide initiator capillary column coating

Index Entries

Siloxanes and Silicones, uses and miscellaneous
coatings, in capillary columns for gas chromatog.
Chromatography, gas
columns, silicone immobilized coatings in capillary
Peroxides, uses and miscellaneous
org., catalyst, for crosslinking of siloxane coatings for gas
chromatog. capillary columns

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94:16297

Coenzyme models. 21. Oxidative trapping of carbanion intermediates by a flavin immobilized in cationic polymers.

Shinkai, Seiji; Kusano, Yumiko; Manabe, Osamu (Fac. Eng., Nagasaki Univ., Nagasaki 852, Japan). Makromol. Chem., 181(9), 1791-8 (English) 1980. CODEN: MACEAK. ISSN: 0025-116X. DOCUMENT

TYPE: Journal CA Section: 35 (Synthetic High Polymers) Section cross-reference(s): 7, 22, 67

Arom. aldehydes and a-keto acids in the presence of CN-, rather than undergoing the benzoin reaction, were oxidized to the corresponding BzOH derivs. by the catalytic action of the flavin I (R = polystyrene chain). The change in mechanism is not complete in the presence of flavin I (R = Me) [21066-33-1]. The intermediate [ArC(OH)CN]-, formed by rate-limiting deprotonation or decarboxylation of CN adducts, was shown by product anal. and kinetic measurements to be oxidized immediately by polymer-bound I. The effect of polymer structure on the efficiency of this trapping is discussed.

Keywords

flavin polymer model coenzyme
polystyrene flavin model coenzyme
carbanion trapping flavin polymer
aldehyde oxidn catalyst flavin
keto acid oxidn catalyst
cyanide oxidn aldehyde carbanion

kinetics oxidn aldehyde flavin

Index Entries

Oxidation

of aldehydes and keto acids, by polymer-bound flavins in presence of cyanide, polymer structure effect on

Kinetics of oxidation

of aldehydes and keto acids, in presence of cyanide and polymer-bound flavins

Coenzymes

polymer-bound flavins as models for

Oxidation catalysts

polymer-bound flavins, for aldehydes and keto acids in presence of cyanide

Carbanions

trapping of, by polymer-bound flavins in cyanide-catalyzed reactions of aldehydes and keto acids

151-50-8

aldehyde and keto acid oxidn. in presence of, catalysis of, by polymer-bound flavins

752-13-6, cationic polystyrene derivs.

9003-53-6, flavin derivs.

21066-33-1

catalysts, for oxidn. of aldehydes and keto acid in presence of cyanide

100-52-7, reactions

104-88-1, reactions

611-73-4

874-42-0

7099-88-9

oxidn. of, in presence of cyanide, polymer-bound flavin catalysis of

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94:16190

Synthesis and properties of polynuclear heterometallic immobilized catalysts.

Pomogailo, A. D.; Khrisostomov, F. A.; Lisitskaya, A. P.; Bochkin, A. M.; Golubeva, N. D.; D'yachkovskii, F. S.; Enikolopov, N. S. (USSR).

Katalizatory, Soderzhashch. Nanesen. Kompleksy. Materialy Simpoz., Tashkent, 1980., Novosibirsk, (Ch. 1), 151-4 From: Ref. Zh., Khim.

1980, Abstr. No. 21S202(Russian) 1980. DOCUMENT TYPE: Journal

CA Section: 35 (Synthetic High Polymers)

Title only translated.

Keywords

metal catalyst fixed polymn

Index Entries

Polymerization catalysts

polynuclear heterometallic immobilized, for ethylene, prepn. and properties of

9002-88-4

prepn. of, catalysts for

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93:226389

Kinetic behavior to be expected from outer-sphere redox catalysts confined within polymeric films on electrode surfaces.

Anson, Fred C. (Arthur Amos Noyes Lab., California Inst. Technol., Pasadena, CA 91125, USA). J. Phys. Chem., 84(25), 3336-8

(English) 1980. CODEN: JPCHAX. ISSN: 0022-3654. DOCUMENT
TYPE: Journal CA Section: 67 (Catalysis and Reaction Kinetics)
Section cross-reference(s): 72

Some elements of R. A. Marcus theory (1960, 1965) are applied to predict the likely kinetic behavior of redox catalysts held in polymeric films attached to electrode surfaces. The cross reaction between attached catalyst and dissolved substrate is most often rate limiting. Charge transfer through the attached film may become rate limiting under certain conditions, but electron transfer between the electrode and catalysts attached to its surface is predicted not likely to be a rate-limiting process. For catalyst-substrate combinations with cross-reaction rate consts. near the diffusion limit efficient catalysis seems possible even when the equil. const. for the cross reaction is much less than unity.

Keywords

Marcus theory electrode redox catalyst
polymer film immobilized redox catalyst

Index Entries

Kinetics of redox reaction
Redox reaction
electrochem., at electrode surfaces with catalysts confined within polymeric films
Redox reaction catalysts
electrochem., confined within polymeric films on electrode surfaces

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93:109729

Immobilized enzyme packed-bed reactors containing a pellicular catalyst.

Karant, N. G.; Patwardhan, V. S. (Natl. Chem. Lab., Poona 411 008, India). Chem. Eng. J. (Lausanne), 19(2), 167-9 (English) 1979.

CODEN: CMEJAJ. ISSN: 0300-9467. DOCUMENT TYPE: Journal
CA Section: 7 (Enzymes)

A polemic. Conventional and pellicular (shell-structured) catalysts in immobilized enzyme packed-bed reactors were compared by S. H. Lin (ibid. 1977, 14, 129) by looking at the exit substrate concn. or the exit conversion for equal reactor vols. This is not a proper criterion. When reactors were compared by looking at the outlet conversion for a given catalyst wt., a simple anal. showed that for a plug-flow reactor the pellicular catalyst gives a better performance than conventional catalysts.

Keywords

pellicular enzyme reactor polemic

Index Entries

Enzymes
immobilized, in reactors, performance of pellicular
Reactors
biocatalytic, packed-bed, pellicular catalysts in, performance of

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93:90439

Sephadex-bound histamine in the catalysis of ester hydrolysis.

Nilsson, Kurt; Mosbach, Klaus (Chem. Cent., Univ. Lund, Lund S-220 07/7, Swed.). J. Solid-Phase Biochem., 4(4), 271-7 (English) 1979.

CODEN: JSBIDL. ISSN: 0146-0641. DOCUMENT TYPE: Journal CA

Section: 6 (General Biochemistry)

Ester hydrolysis by Sephadex-bound catalysts was studied in a flow-through system. Three different immobilized preps. were synthesized and used: histamine-, coimmobilized histamine-octylamine-, and octylamine-Sephadex; octylamine-Sephadex was used as a ref. Immobilization was carried out using water-sol. carbodiimide, which gave amide linkages between CM-Sephadex and the groups attached. The coimmobilized histamine-octylamine prep. was 3-fold more efficient than immobilized histamine alone in the hydrolysis of p-nitrophenylcaproate, whereas hardly any difference was found in the hydrolysis of the less hydrophobic substrate p-nitrophenylacetate. This enhancement of the hydrolysis of p-nitrophenylcaproate is attributed to local enrichment of the substrate on the histamine-octylamine matrix caused by the presence of hydrophobic octyl groups.

Keywords

immobilized histamine catalysis ester hydrolysis

Index Entries

Hydrolysis catalysts

histamine or histamine-octylamine with Sephadex, for esters

51-45-6, reaction products with octylamine and Sephadex C-25

carboxymethyl ether

111-86-4, reaction products with histamine and Sephadex C-25

carboxymethyl ether

62886-59-3, reaction products with histamine or histamine-octylamine catalyst, for hydrolysis of esters

830-03-5

956-75-2

hydrolysis of, catalysts for, histamine and histamine-octylamine

immobilized on Sephadex as

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92:162366

Hydrogenation of cottonseed oil on a fixed supported catalyst.

Mazhidov, K. Kh.; Abdurakhimov, A.; Rakhmatullaev, Kh. N.;

Glushenkova, A. I.; Ibragimov, Yu. I. (Tashkent. Politekh. Inst., Tashkent, USSR). Maslo-Zhir. Prom-st., (2), 19-21 (Russian) 1980. CODEN:

MZPYAE. ISSN: 0025-4649. DOCUMENT TYPE: Journal CA Section:

17 (Foods)

Cottonseed oil was hydrogenated by passing it through a column (18 ' 670 mm) contg. 200 g of a stationary catalyst (9% Ni on Al oxide). With a H pressure of 2.94 kPa and a rate of H percolation of 50/h, the hydrogenation velocity rose linearly as the temp. rose from 140 to 220°.

With the temp. at 200°, H percolation rate at 50/h, and oil flow rate at 0.6 mL/min, hydrogenation velocity increased linearly as H pressure increased from 0.98 to 8.82 kPa. The hydrogenated oil was suitable for margarine manuf. The catalyst was regenerated by heating at 240° for 1.5 h..

Keywords

cottonseed oil hydrogenation

Index Entries

Cottonseed oil

hydrogenation of, on nickel-aluminum oxide catalyst

Hydrogenation catalysts

nickel-aluminum oxide, for cottonseed oil hydrogenation

7440-02-0, biological studies

catalysts, immobilized on aluminum oxide, for cottonseed oil hydrogenation

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90:206341

Radial reactor for carrying out enzyme-catalyzed reactions.

Bartoli, Francesco; Morisi, Franco; Zaccardelli, Delio (SNAM Progetti S.p.A., Italy). Ger. Offen. DE 2844688 19 Apr 1979, 13 pp. (German). (Germany). CODEN: GWXXBX. CLASS: IC: B01J008-06.

PRIORITY: IT 77-28553 13 Oct 1977. DOCUMENT TYPE: Patent CA

Section: 47 (Apparatus and Plant Equipment) Section

cross-reference(s): 7

The reactor consists of a cylindrical shell with a closed bottom, a cover with a feed inlet and a product outlet, and an annular catalyst bed that is supported by the cover and the bottom of the shell. The annular bed consists of fibers that are wrapped around a perforated tube with pitch 0.001-10 cm. The enzyme catalyst is bound to, or enclosed by, the fibers.

Keywords

reactor enzyme catalyst

Index Entries

Reactors

with enzymes immobilized in annular bed

Enzymes

immobilized, reactor with, in annular bed

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90:168955

Resolution of α -amino acids by stereoselective hydrolysis of their esters catalyzed by transition metal chiral complexes immobilized on polymeric supports.

Spassky, Nicolas; Reix, Michel; Guette, Jean Paul; Guette, Marguerite; Sepulchre, Marie Odile; Blanchard, Jean Marie (Lab. Chim. Macromol., Univ. Pierre et Marie Curie, Paris, Fr.). C. R. Hebd. Seances Acad. Sci., Ser. C, 287(16), 589-91 (French) 1978. CODEN: CHDCAQ.

ISSN: 0567-6541. DOCUMENT TYPE: Journal CA Section: 34

(Synthesis of Amino Acids, Peptides, and Proteins)

Chiral complexes were prep'd. by binding histidine to a Merrifield type resin and complexing with Ni or copolymer.

4-CH₂:CHC₆H₄CH₂-His-OMe with CH₂:CMeCO₂CH₂CH₂OH and

crosslinking agent (CH₂:CMeCO₂CH₂)₂ and complexing the resulting

crosslinked copolymer with Ni. Histidine Ni complex and

4-CH₂:CHC₆H₄CH₂-His-OH Ni complex had a stereoselectivity $k(D)/k(L)$

= 1.6 for the hydrolysis of DL-H-His-OMe, whereas the 2nd resin complex had $k(D)/k(L)$ = 1.4. Stereoselectivity of the 1st complex was

masked by the non-catalyst hydrolysis. When the 1st resin was used in

a column at pH 7.5, a stationary state was achieved at 72% hydrolysis

and a stereoselectivity of 1.15-1.2. The 2nd resin was used for column

chromatog. resoln. of DL-histidine, giving pure L-isomer at the head of the column.

Keywords

histidine nickel complex polymer bound

resoln amino acid chiral chromatog

hydrolysis amino acid ester stereoselectivity

Index Entries

Resolution

of amino acids by chiral col. chromatog.

Chromatography, column and liquid

of racemic amino acids, polymer-bound histidine nickel complexes
as columns for

Amino acids, preparation

racemic, resoln. of, polymer-bound histidine nickel complexes in

Hydrolysis

stereoselectic, of racemic amino acid esters

Stereochemistry

stereoselectivity, in hydrolysis of racemic amino acid esters by

catalysis with polymer-bound histidine nickel complexes

71-00-1, nickel complex

69984-04-9, nickel complex

catalyst, for stereoselective hydrolysis of DL-histidine Me ester

71-00-1, nickel complex, resin-bound

69941-64-6, nickel complex

prepn. of, as catalyst for amino acid ester hydrolysis

71-00-1, reactions

reaction of, with Merrifield polymer

4998-57-6

resoln. of, polymer-bound histidine nickel complexes in

62013-45-0

stereoselective hydrolysis of, polymer-bound histidine nickel

complexes as catalysts for

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90:23746

Catalysts of polymerization processes immobilized on polymer
supports.

D'yachkovskii, F. S.; Pomogailo, A. D.; Ponomarev, A. N. (USSR).

Kompleks. Metalloorgan. Katalizatory Polimeriz. Olefinov, (7), 46-70

From: Ref. Zh., Khim. 1978, Abstr. No. 19S261 (Russian) 1978.

DOCUMENT TYPE: Journal; General Review CA Section: 35

(Synthetic High Polymers)

Title only translated.

Keywords

review polymn catalyst polymer support

Index Entries

Polymers, uses and miscellaneous

catalyst supports

Polymerization catalysts

on polymer support

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89:41805

Hydroformylation, hydrogenation, and isomerization of olefins over
polymer-immobilized rhodium complexes.

Arai, Hiromichi (Fac. Eng., Univ. Tokyo, Tokyo, Japan). J. Catal.,

51(2), 135-42 (English) 1978. CODEN: JCTLA5. ISSN: 0021-9517.

DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic
Chemistry)

Rh₂(CO)₄Cl₂ coordinatively bonded to a phosphine group on

polystyrene-coated silica gel was prepd. and its catalytic activity tested

for hydroformylation, hydrogenation, and isomerization of olefins in the

vapor phase. The dependence of rates and product yields on the

partial pressures of H₂, CO, and olefins was examd. The reaction

mechanisms were elucidated by applying the transient response

method. The results were compared with those of homogeneous

catalysis.

Keywords

olefin hydroformylation hydrogenation isomerization
rhodium catalyst hydroformylation alkene

Index Entries

Alkenes, reactions
hydroformylation, hydrogenation and isomerization of, catalysts for
Hydrobromination catalysts
Hydrogenation catalysts
Isomerization catalysts
rhodium complexes, for olefins
14523-22-9
14523-22-9, polymer-bound
catalyst, for hydroformylation, hydrogenation and isomerization of
olefins
74-85-1, reactions
115-07-1, reactions
hydroformylation and hydrogenation of, catalysts for
106-98-9, reactions
hydroformylation, hydrogenation and isomerization of, catalysts for

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88:90131

New methods for immobilization of transition metal compounds on
polyolefins with a modified surface and their catalytic properties in
polymerization of ethylene.

Pomogailo, A. D.; Lisitskaya, A. P.; Ponomarev, A. N.; D'yachkovskii,
F. S. (USSR). Katalizatory, Soderzhashchie Nanesen. Kompleksy.,
35-8 From: Ref. Zh., Khim. 1977, Abstr. No. 23S268 (Russian) 1977.

DOCUMENT TYPE: Journal CA Section: 35 (Synthetic High Polymers)

Title only translated.

Keywords

transition metal compd polymn catalyst
polyolefin transition metal complex
ethylene polymn catalyst

Index Entries

Polymerization catalysts
transition metal compds. immobilized on surface-modified
polyolefins, for ethylene
Transition metals, compounds
compds., immobilization of, on surface-modified polyolefins, for
ethylene polymn. catalysis
Alkenes, polymers
polymers, immobilization of transition metal compds. on
surface-modified, for catalysis of ethylene polymn.
74-85-1, reactions
polymn. of, catalysts for

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87:113898

Catalyst for biochemical reaction and method of preparing it.

Wood, Louis Leonard; Hartdegen, Frank J.; Hahn, Peter A. (Grace, W.
R., and Co., USA). Brit. GB 1470291 14 Apr 1977, 9 pp., Addn. to Brit.
1,429,711. (English). (United Kingdom). CODEN: BRXXAA. CLASS:
IC: C07G007-02. APPLICATION: GB 75-36001 1 Sep 1975.

DOCUMENT TYPE: Patent CA Section: 7 (Enzymes)

Composite catalysts for biochem. reactions were prepd. by contacting polyurethane prepolymers having ≥ 2 free isocyanate groups per mol. with aq. dispersions of enzymes under foam-forming conditions. E.g., ethylene glycol and toluene diisocyanate were mixed at 65.degree. and, when clear, cooled to 4.degree.. Fermn. broth contg. cellulase activity was added at 4.degree. with const. stirring. After about 15 min a foam was obtained with cellulase activity.

Keywords

polyurethane foam enzyme binding

Index Entries

Urethane polymers, uses and miscellaneous
enzyme immobilization on
Enzymes
immobilization of, on polyurethane foams
61-33-6, reactions
amidation of, with immobilized penicillin amidase
9040-19-1
amyloglucosidase immobilization on
9072-91-7
cellulase immobilization on
9002-07-7
9012-54-8
9014-06-6
9031-11-2
9032-08-0
9032-75-1
9055-00-9
immobilization of, on polyurethane foams
551-16-6
prepn. of, by reaction of penicillin G with immobilized penicillin
amidase
58421-39-9, crosslinked
trypsin immobilization on

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95:169879

Catalytic behavior of metal complexes immobilized in functional polymeric carriers.
Kabanov, V. A.; Smetanyuk, V. I. (Inst. Petrochem. Synth., Moscow, USSR). Macromol. Chem. Phys., Suppl., 5, 121-54 (English) 1981.
CODEN: MCPSD8. DOCUMENT TYPE: Journal CA Section: 35
(Synthetic High Polymers) Section cross-reference(s): 23, 67
The general principles of construction of gel-immobilized catalyst systems (GICS) are reported as well as some peculiarities of the polymn. of ethylene [74-85-1] and of the dimerization of ethylene and propylene [115-07-1] in the presence of these systems. GICS consist of a transition metal complex and a specially designed polymeric support. Advantages offered by GCIS are discussed with respect to homogeneous and microheterogeneous metal complex catalysts.

Keywords

dimerization ethylene catalyst support
propylene dimerization catalytic

Index Entries

Dimerization catalysts
modified Ziegler, supported, metal complexes, for ethylene and

propylene
 Naphthenic acids, compounds
 nickel salts, catalysts, for dimerization of ethylene
 Alkadienes
 polymers with ethylene, propylene and butadiene or vinylpyridine,
 nickel complexes, catalysts, for dimerization of ethylene
 Rubber, synthetic
 EPDM, butadiene or vinylpyridine-grafted, nickel complexes,
 catalysts, for dimerization of ethylene
 Polymerization catalysts
 modified Ziegler, supported, metal complexes, for ethylene
 100-43-6, polymers with EPDM rubber, nickel complexes
 106-99-0, polymers with EPDM rubber, nickel complexes
 115-07-1, polymers with dienes, ethylene and butadiene or
 vinylpyridine, nickel complexes
 603-35-0, uses and miscellaneous
 3264-82-2
 7429-90-5, alkyl derivs.
 7718-54-9, uses and miscellaneous
 13138-45-9
 catalysts, for dimerization of ethylene
 1271-19-8
 1686-22-2
 7439-95-4, org. derivs., chlorides
 7550-45-0, uses and miscellaneous
 7632-51-1
 catalysts, for polymn. of ethylene
 74-85-1, reactions
 115-07-1, reactions
 dimerization of, catalysts for
 79-41-4, polymers with EPDM rubber
 107-18-6, polymers with EPDM rubber
 graft
 9002-88-4
 prepn. of, catalysts for
 106-98-9, preparation
 590-18-1
 624-64-6
 prepn. of, from ethylene

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95:139378
 Macrokinetics of gel-immobilized catalytic systems.
 Neimark, A. V.; Slin'ko, M. G.; Kheifets, L. I. (Nauchno-Issled. Fiz.-Khim.
 Inst. im. Karpova, Moscow, USSR). Dokl. Akad. Nauk SSSR, 259(2),
 408-12 [Phys. Chem.] (Russian) 1981. CODEN: DANKAS. ISSN:
 0002-3264. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis
 and Reaction Kinetics) Section cross-reference(s): 66
 The 1st- and 2nd-order reaction kinetics involving gel-fixed catalytic
 systems was analyzed math. The dependence of the reaction rate on
 basic structural characteristics is discussed and the evaluation of the
 optimal structure hierarchy is considered.

Keywords

macrokinetics gel fixed catalyst math

Index Entries

Catalysts and Catalysis
 gel-fixed, macrokinetics of
 Kinetics, reaction
 of gel-fixed catalysis

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95:133935

Polymeric catalysts: a contribution to improve the ecology of chemical processes.

Klein, Joachim (Inst. Chem. Technol., Tech. Univ. Braunschweig, Braunschweig D-3300, Fed. Rep. Ger.). Macromol. Chem. Phys., Suppl., 5, 155-78 (English) 1981. CODEN: MCPSD8. DOCUMENT

TYPE: Journal; General Review CA Section: 37 (Plastics Fabrication and Uses) Section cross-reference(s): 67

A review with 25 refs. on ion exchange resins for acid-catalyzed reactions and on immobilization of living microbial cells to be applied in heterogeneous biocatalysis.

Keywords

review ion exchanger catalyst
microbial cell immobilization review

Index Entries

Catalysts and Catalysis
cation exchangers
Cation exchangers
in acid-catalyzed reaction
Polymers, uses and miscellaneous
in ion-exchange and microbial-cell catalysis
Catalysts and Catalysis
gel-immobilized, porous, contg. living microbial cells

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95:79761

The isomerization activity and stability of immobilized antimony fluoride (SbF₅).

Heinerman, J. J. L.; Gaaf, J. (K. Shell Lab., Amsterdam, Neth.). J. Mol. Catal., 11(2-3), 215-24 (English) 1981. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry)

The intercalate formed by reaction of SbF₅ with graphite is an active, though rapidly deactivating, catalyst for the room-temp. hydroisomerization of pentane and hexane. A better stability is obtained if the SbF₅ is reacted with fluorinated graphite. X-ray diffraction data showed that SbF₅ is not intercalated in fluorinated graphite with an F/C ratio of 1.1. In samples with an F/C ratio of 1.0 or 0.8 it was found that only the non-fluorinated graphite present in these samples is capable of intercalating SbF₅. Deactivation is due to poisoning of the active sites by unsatd. heavy products.

Keywords

antimony fluoride fluorinated graphite
pentane isomerization catalyst

Index Entries

Isomerization catalysts
antimony pentafluoride on fluorinated graphite, for pentane
Isomerization
Kinetics of isomerization
reductive, of pentane on antimony pentafluoride and fluorinated
graphite
7782-42-5, fluorinated
catalysts with antimony pentafluoride, for hydride isomerization of
pentane

7783-70-2

catalysts, with fluorinated graphite, for hydroisomerization of pentane

109-66-0, reactions

hydride isomerization of, over antimony pentafluoride and fluorinated graphite

7783-68-8

hydroisomerization catalysts, for pentane

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95:25628

Optically pure heterocyclic amino acids and their use.

Preiss, Michael; Schutt, Hermann (Bayer A.-G., Fed. Rep. Ger.). Ger.

Offen. DE 2927534 08 Jan 1981, 20 pp. (German). (Germany).

CODEN: GWXXBX. CLASS: IC: C07D307-54; C07D231-10;

C07D233-00; C07D261-00. APPLICATION: DE 79-2927534 790707.

DOCUMENT TYPE: Patent CA Section: 34 (Synthesis of Amino Acids, Peptides, and Proteins) Section cross-reference(s): 27, 28

Optically active RR1NCHCR2COR3 [R and R1 = H, acyl, alkoxycarbonyl; R2 = heterocyclic residue with 1-4 atoms of O, S, or N; R3 = OH, Cl-4 alkoxy, NR4 (R4 = H, Cl-4 alkyl)] were prepd. Thus, DL-furylglycine DL-I (R5 = R6 = H) (DL-II) was N-formylated and then esterified with NaOH/MeI to give DL-I (R5 = HCO, R6 = Me) (DL-III), which was hydrolyzed by catalysis with subtilisin immobilized on cellulose to give D-III and L-I (R5 = HCO, R6 = H) (L-IV). D-III was hydrolyzed by 2N HCl for 70 min at 80° to give D-I.HCl. L-IV can be converted to L-II.HCl.

Keywords

heterocyclic amino acid optically active
resoln heterocyclic amino acid
enzyme hydrolysis heterocyclic amino acid ester
furylglycine

Index Entries

Resolution

of heterocyclic DL-amino acids, enzymic hydrolysis of acyl ester derivs. in relation to

Amino acids, esters

DL-, heterocyclic, esters, enzymic hydrolysis of

Amino acids, preparation

DL-, heterocyclic, resoln. of, by enzymic hydrolysis of acyl ester deriv.

Amino acids, preparation

heterocyclic, optically active, prepn. of, by enzymic hydrolysis of heterocyclic acyl DL-amino acid esters

9014-01-1, immobilized

catalyst, for hydrolysis of heterocyclic DL-amino acid esters

17119-54-9

formylation of

78060-99-8

prepn. and Me esterification of

78088-59-2

prepn. and deblocking of

55362-75-9

prepn. and esterification of, with diazomethane

78061-00-4

prepn. and hydrolysis of

78061-01-5

78148-18-2

prepn. and subtilisin-catalyzed hydrolysis of

78088-57-0

78088-58-1
78088-60-5
prepn. of
58632-95-4
reaction of, with furylglycine

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94:191208

Effect of the structure of organosilanes on the kinetics of 1-heptene hydrosilylation in the presence of an immobilized catalyst. Zaslavskaya, T. N.; Filippov, N. A.; Reikhsfel'd, V. O. (Leningr. Tekhnol. Inst., Leningrad, USSR). Zh. Obshch. Khim., 51(1), 107-11 (Russian) 1981. CODEN: ZOKHA4. ISSN: 0044-460X. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Rate consts. and activation energies were detd. for the hydrosilylation of 1-heptene by RSiHMePh (R = Me₂CH, Bu, Et, Me, PhCH₂, Ph, CH₂Cl, Cl). A 4-parameter equation was obtained relating the reaction rate to s* and Es parameters, the Si-H stretching vibrational frequency, and the NMR chem. shift of the SiH proton.

Keywords

hydrosilylation heptene substituent effect
steric effect hydrosilylation heptene
LFER hydrosilylation heptene
NMR hydrosilylation heptene
IR hydrosilylation heptene

Index Entries

Steric effect
Substituent effect
in hydrosilylation of heptene
Kinetics of hydrosilylation
of heptene, substituent effects on
Infrared spectra
Nuclear magnetic resonance
of organosilanes, hydrosilylation of heptene in relation to
Reaction constant
r, in hydrosilylation of heptene
766-77-8
776-76-1
1631-82-9
18246-09-8
43185-24-6
65105-84-2
74605-35-9
76622-52-1
hydrosilylation of heptene by, kinetics of
592-76-7
hydrosilylation of, substituent effects on

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94:102407

Study of immobilized catalysts. II. Magnetic properties of catalysts of the dimerization of olefins based on nickel complexes. Echmaev, S. B.; Ivleva, I. N.; Bravaya, N. M.; Pomogailo, A. D.; Borod'ko, Yu. G. (Otd. Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 21(6), 1530-4 (Russian) 1980. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 35, 67 The magnetic moment and magnetic susceptibility of catalysts formed by attaching Ni(II) compds. to polyethylene grafted with polyacrylic acid,

polymethacrylic acid, and poly-4-vinylpyridine were studied, and the kinetics of ethylene dimerization on these catalysts were detd. Attachment of the Ni compds. to the polymers did not change the oxidn. state of Ni. The catalysts were deactivated by redn. with an alkylaluminum chloride to form finely dispersed metallic Ni. The polymeric support retarded the aggregation of Ni(0) complexes and thereby prevented deactivation of the catalysts.

Keywords

ethylene dimerization nickel polymer
magnetic property nickel polymer catalyst

Index Entries

Polymers, uses and miscellaneous
catalysts, contg. nickel complexes, for dimerization of ethylene
Naphthenic acids, compounds
nickel salts, catalysts from polymers and, for dimerization of ethylene
Kinetics of dimerization
of ethylene on polymer-fixed nickel catalysts
Magnetic moment
Magnetic susceptibility
of nickel-polymer dimerization catalysts
Dimerization catalysts
polymer-fixed nickel complexes, for ethylene
373-02-4
7718-54-9, uses and miscellaneous
catalysts from polymers and, for dimerization of ethylene
74-85-1, reactions
dimerization of, with polymer-fixed nickel catalysts
97-93-8, uses and miscellaneous
effect of, on polymer-fixed nickel dimerization catalysts
9002-88-4
grafted with other polymers, catalysts from nickel complexes and, for dimerization of ethylene
9003-01-4
25087-26-7
25232-41-1
polyethylene grafted with, catalysts, contg. nickel complexes, for dimerization of ethylene
96-10-6, reactions
563-43-9, reactions
redn. of polymer-fixed nickel complexes by

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91:148464

Chemically modified carbon electrodes. Part XVII. Metalation of immobilized tetra(aminophenyl)porphyrin with manganese, iron, cobalt, nickel, copper and zinc, and electrochemistry of diprotonated tetraphenylporphyrin.

Rocklin, Roy D.; Murray, Royce W. (Kenan Lab. Chem., Univ. North Carolina, Chapel Hill, NC 27514, USA). J. Electroanal. Chem. Interfacial Electrochem., 100, 271-82 (English) 1979. CODEN: JEIEBC. ISSN: 0022-0728. DOCUMENT TYPE: Journal CA Section: 72 (Electrochemistry) Section cross-reference(s): 67, 78

Tetra(aminophenyl)porphyrin can be amide-bonded to oxidized glassy C surfaces following activation with acetyl chloride or SOCl₂, with the latter affording higher coverage. The immobilized porphyrin can be metalated with Mn, Fe, Co, Ni, Cu, and Zn. The metalloporphyrins undergo electrochem. reactions in Me₂SO solvent at metal and ring-centered redn. potentials expected on the basis of soln. mol. analogs. In the case of Fe-metalated porphyrin, electrochem. can be

done in aq. acid, where a clear but porphyrin-debilitating dioxygen catalysis is observable. A small reverse wave at about -0.4 V vs. Luggin (NaSCE) ref. electrode in MeCN and Me₂SO solvent is interpreted as re-oxidn. of diprotonated surface bound porphyrin.

Keywords

oxidized carbon electrode modified porphyrin
chem modified electrode carbon porphyrin
metalated porphyrin modified carbon electrode
voltammetry metalated porphyrin modified carbon
electrochem diprotonated tetraphenylporphyrin
protonated tetraphenylporphyrin electrochem
phenylporphyrin diprotonated electrochem
aminophenylporphyrin modified carbon electrode metalated
oxygen electroredn catalyst iron porphyrin

Index Entries

Reduction, electrochemical
of aminophenylporphyrin-metal complexes, on chem. modified
carbon electrode in di-Me sulfoxide
Electrodes
chem. modified, oxidized carbon, bonded with
aminophenylporphyrin and metalated
Reduction catalysts
electrochem., iron-aminophenylporphyrin complex, bonded to
oxidized carbon electrode, for oxygen
Electric potential
redn., of diprotonated tetraphenylporphyrin, anion effect on
14797-55-8, properties
14797-73-0
16887-00-6, properties
elec. redn. potential of diprotonated tetraphenylporphyrin in soln.
contg.
50849-35-9
electrochem. of
7440-44-0, oxidized
reaction of, with acetyl chloride or thionyl chloride and
aminophenylporphyrin followed by metalation for chem.
modified electrodes
22112-84-1
reaction of, with activated oxidized carbon surface followed by
metalation for chem. modified electrodes
75-36-5
7719-09-7
reaction of, with oxidized carbon in aminophenylporphyrin
attachment and metalation in chem. modified electrode
prepn.
7782-44-7, reactions
redn. of, electrochem., on iron-aminophenylporphyrin complex
bonded to oxidized carbon electrode
67-68-5, uses and miscellaneous
voltammetry of metalated aminophenylporphyrin attached to
oxidized carbon electrode in
67201-98-3
67595-95-3
67595-97-5
67595-98-6
67595-99-7
71547-21-2
71547-22-3
71547-23-4
voltammetry of oxidized carbon electrode chem. modified with

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90:99262

Immobilized organic catalyst.

Inoue, Kiyoshi (Inoue-Japax Research Inc., Japan). Jpn. Kokai Tokkyo Koho JP 53115879 9 Oct 1978 Showa, 3 pp. (Japanese). (Japan).

CODEN: JKXXAF. CLASS: IC: C12K001-00. APPLICATION: JP

77-30016 17 Mar 1977. DOCUMENT TYPE: Patent CA Section: 7

(Enzymes)

Microbial cells or enzymes are magnetically immobilized on a carrier resin in which magnetic material or magnetic particles are dispersed. Immobilization and activation of the enzyme are controlled by an outer magnetic field. Thus, polyacrylamide was mixed with 28% of ferrite powder (40-200 Å), the mixt. was dispersed into glucose oxidase soln., and the enzyme was immobilized under an outer magnetic field of 500 GG. The immobilized enzyme prepn. retained >90% of the initial enzyme activity for 200 days.

Keywords

enzyme immobilization polyacrylamide magnetism
bacteria immobilization polyacrylamide magnetism
immobilization enzyme polyacrylamide magnetism
glucose oxidase immobilization polyacrylamide magnetism
polyacrylamide enzyme immobilization magnetic field

Index Entries

Microorganism

Enzymes

immobilization of, on polyacrylamide in magnetic field

Magnetic field, biological effects

in glucose oxidase immobilization on polyacrylamide

9003-05-8

glucose oxidase immobilization on, in magnetic field

9001-37-0

immobilization of, on polyacrylamide in magnetic field

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88:185525

A new method of separating inorganic orthophosphate from phosphoric esters and anhydrides by an immobilized catalyst column.

Ohnishi, S. Tsuyoshi (Dep. Anesthesiol., Hahnemann Med. Coll., Philadelphia, Pa., USA). Anal. Biochem., 86(1), 201-13 (English) 1978. CODEN: ANBCA2. ISSN: 0003-2697. DOCUMENT TYPE:

Journal CA Section: 9 (Biochemical Methods)

A column of polyvinylpolypyrrolidone packed in a 1-mL Tuberculin syringe was used as a stationary phase for affinity chromatog. of phosphomolybdate. When a mixt. of inorg. orthophosphate, phosphoric esters, and phosphoric anhydrides was introduced into such a column in the presence of molybdate (2-3%, pH 3-5), inorg. orthophosphate adsorbs specifically to the column material as phosphomolybdate, whereas other phosphate compds., which do not react with molybdate, drain through. Mild centrifugation (8-50 g) was used to hasten elution to minimize the hydrolysis of acid-labile phosphates. The method allowed sepn. of radioactive phosphate compds. from a small amt. of soln. (0.2-1.0 mL) without either org. solvent extn. or transfer of sample, which may cause error and(or) contamination. With 3% molybdate, pH 3.0, 98.5% of ATP was recovered, whereas 0.05% of inorg. orthophosphate was eluted in the effluent. Retained inorg. orthophosphate could be eluted later by 0.5M NH₄OH with a recovery of 98.2%. Unlike other methods of sepg. phosphomolybdate, this one is virtually insensitive to the presence of reducing reagents.

Keywords

inorg orthophosphate affinity chromatog
phosphate affinity chromatog

Index Entries

Phosphates, analysis
sepn. of, from inorg. phosphate by affinity chromatog.
11098-84-3
phosphate sepn. by affinity chromatog. in presence of,
phosphomolybdate formation in relation to
9003-39-8
phosphomolybdate affinity chromatog. on, phosphate sepn. by
14265-44-2, analysis
sepn. of, by affinity chromatog., phosphomolybdate formation in
relation to
56-65-5, analysis
sepn. of, from inorg. phosphate by affinity chromatog.

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86:13237

Catalyst for a biochemical reaction.
(Grace, W. R., and Co., USA). Belg. BE 833191 8 Mar 1976, 21 pp.
(Unavailable). (Belgium). CODEN: BEXXAL. CLASS: IC: C12D.
APPLICATION: BE 75-833191 8 Sep 1975. DOCUMENT TYPE:
Patent CA Section: 7 (Enzymes)
A method is described for the prepn. of an expanded polyurethane by
reacting a polyetherpolyol with a polyisocyanate, which when combined
with an enzyme forms a mixed catalyst in which the enzyme becomes
insol. but retains its activity. Thus, ethylene glycol (100 g) and toluene
diisocyanate (282 g) were mixed in a thermostatic bath at 65.degree..
After the mixt. became clear, it was cooled to 4.degree., and a fermn.
broth with a cellulase activity was added at the same temp. and with
const. agitation. At the end of the formation of an expanded
polyurethane (after .apprx.15 min), the expanded material was washed
with water and was shown to have a cellulase activity in the presence of
carboxymethylcellulase as substrate.

Keywords

polyurethane expanded enzyme immobilization

Index Entries

Apple juice
clarification of, by immobilized pectinase
Urethane polymers, biological studies
enzyme immobilization on expanded
Enzymes
immobilization of, on expanded polyurethanes
9002-07-7
9012-54-8
9014-06-6
9031-11-2
9032-08-0
9032-75-1
9055-00-9
immobilization of, on expanded polyurethanes
107-21-1, reaction products with toluene diisocyanate
9040-19-1
9042-77-7
9072-91-7
25322-68-3, reaction products with toluene diisocyanate

25322-69-4, reaction products with toluene diisocyanate
26471-62-5, reaction products with glycols
in enzyme immobilization
56-81-5, biological studies
77-99-6
115-77-5, biological studies
in enzyme immobilization, on expanded polyurethanes

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101:110060

Rhodium(I) and ruthenium(II) complexes of sulfonated triphenylphosphine immobilized on ion-exchange materials.
Joo, F.; Beck, M. T. (Inst. Phys. Chem., Kossuth Lajos Univ., Debrecen H-4010, Hung.). J. Mol. Catal., 24(2), 135-45 (English) 1984. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE: Journal CA
Section: 22 (Physical Organic Chemistry)
Complexes of sulfonated Ph₃P with Ru(II) and Rh(I) were immobilized on strongly basic anion exchangers. The heterogenized complexes were applied successfully to the hydrogenation of various olefins in soln. at 60° and in the gas phase at 120° at 0.1 MPa total pressure. Kinetic features of MeCH:CHCO₂H hydrogenation in aq. soln. suggest that the anchored L₂RuCl₂ (L = m-HO₃SC₆H₄PPh₂) exerts its catalytic influence via the same mol. pathway as in homogeneous solns.

Keywords

rhodium ruthenium sulfonated phosphine catalyst
hydrogenation catalyst rhodium ruthenium
anion exchanger ruthenium rhodium

Index Entries

Anion exchangers
catalyst support, for ruthenium or rhodium hydrogenation catalyst
Polymer-supported reagents
catalysts, rhodium and ruthenium complexes with sulfonated triphenylphosphine on anion exchangers, for alkene hydrogenation
Alkenes, reactions
hydrogenation of, immobilized catalyst for
Hydrogenation
Kinetics of hydrogenation
of alkenes in soln. and gas phase, catalytic
Solvent effect
on catalytic activity of immobilized catalyst for hydrogenation of alkenes
Hydrogenation catalysts
rhodium and ruthenium complexes of sulfonated triphenylphosphine immobilized on anion exchangers, for alkenes, kinetics
with
9003-70-7, (diethylamino)ethylated
9013-34-7
9056-02-4
91449-18-2
91449-87-5
catalyst support, for ruthenium or rhodium hydrogenation catalyst
65901-44-2, immobilized on anion exchanger
75813-17-1, immobilized on anion exchanger
catalyst, for hydrogenation of alkenes
16704-71-5
effect of, on crotonic acid hydrogenation in presence of ruthenium catalyst
110-83-8, reactions
hydrogenation of, immobilized catalyst for

3724-65-0

hydrogenation of, rhodium and ruthenium complexes with
sulfonated triphenylphosphine immobilized on anion
exchangers as catalyst for
100-42-5, reactions
hydrogenation of, ruthenium complex immobilized on anion
exchanger as catalyst for
12092-47-6
reaction of, with anion exchangers and sulfonation of

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99:201122

Changes in catalytic properties of 12-heteropoly acids in reaction of
dihydrogen evolution from water induced by their immobilization on
anion-exchange polymers.

Saidkhanov, S. S.; Kokorin, A. I.; Savinov, E. N.; Vokov, A. I.; Parmon,
V. N. (Andizhan Pedagog. Inst., Andizhan, USSR). J. Mol. Catal., 21,
365-73 (English) 1983. CODEN: JMCADS. ISSN: 0304-5102.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms)

12-Heteropolyacids, H₄[SiW₁₂O₄₀] and H₃[PMO₁₂O₄₀], and their
reduced forms are shown to bind strongly to anion-exchange polymers.
Immobilized heteropolyacids (HPAs) retain some of the properties of
HPAs in homogeneous solns., e.g. ability to undergo a multi-electron
redn.; however, they lose the ability of homogeneous HPAs to catalyze
the evolution of dihydrogen H₂ from H₂O. A possible reason for the
decreased catalytic properties of immobilized HPAs is distortion of the
HPA framework upon deprotonation.

Keywords

heteropoly acid immobilized catalyst
water splitting heteropoly immobilized catalyst
hydrogen prodn water splitting catalyst
anion exchanger bound heteropoly catalyst
tungstosilicic acid catalyst polymer immobilized
phosphotungstic acid catalyst polymer immobilized

Index Entries

Heteropoly acids
catalysts, polymer-immobilized, for water splitting
Anion exchangers
heteropoly acids immobilized on, as photochem. redn. catalyst
for water
Reduction catalysts
photochem., polymer-immobilized heteropoly acids, for water
splitting
25038-86-2, benzylated, reaction products with heteropoly acids
26062-79-3, reaction products with heteropoly acids
catalyst, for water splitting
12026-57-2
12027-38-2
catalyst, polymer-immobilized, for water splitting
7732-18-5, reactions
photolysis of, immobilized heteropoly acid catalyst for
1333-74-0, preparation
prodn. of, immobilized heteropoly acid catalyst for

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96:86017

Molecular-weight characteristics of polymers forming on
gel-immobilized metal-complex catalytic systems.

Kabanov, V. A.; Popov, V. G.; Smetanyuk, V. I.; Kalinina, L. P. (Vses. Nauchno-Issled. Inst. Org. Sint., Moscow, USSR). Vysokomol. Soedin., Ser. B, 23(9), 693-8 (Russian) 1981. CODEN: VYSBAI. ISSN: 0507-5483. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 36

The title catalyst systems not only have long-term, stable activity but also lead to the formation of polymers with unimodal mol. wt. distribution (MWD), independent of catalyst age or phase state of the polymers formed. The MWD can be regulated by varying the phys. nature of the gel carrier (in particular, the crosslink d.) and the shape and size of the catalyst particles. Data are given for the mol. wt. properties of polyethylene [9002-88-4] and polypropene [9003-07-0] prep'd. in the presence of VCl_4 , $(\text{EtO})_3\text{VO}$ [1686-22-2], Cp_2TiCl_2 [1271-19-8] (Cp = cyclopentadienyl), and TiCl_4 immobilized on polymer-rubber grafts and, for comparison, in the presence of hetero- and homogeneous catalysts.

Keywords

catalyst polymn gel immobilized
immobilized polymn catalyst
vanadium immobilized catalyst polymn
titanium immobilized catalyst polymn
polyethylene prep'n immobilized catalyst
polypropylene prep'n immobilized catalyst
polydispersity immobilized polymn catalyst

Index Entries

Polymerization catalysts
gel-immobilized titanium and vanadium compds., for olefins, mol. wt. distribution in relation to
110-86-1, titanium chloro complexes
7440-32-6, chloro pyridine complexes
catalysts, for ethylene polymn., mol. wt. distribution in relation to
7446-70-0, uses and miscellaneous
7705-07-9, uses and miscellaneous
18726-14-2
catalysts, for polymn. of ethylene
1271-19-8
1686-22-2
7429-90-5, alkyl derivs.
7439-95-4, alkyl bromo derivs.
7550-45-0, uses and miscellaneous
7632-51-1
catalysts, gel-immobilized, for ethylene polymn., mol. wt. distribution in relation to
73681-98-8
73681-99-9
80916-24-1
80916-25-2
graft, supports, for titanium and vanadium polymn. catalysts, mol. wt. distribution in relation to
9003-17-2
of 1,2-configuration, supports, for tri-Et vanadate polymn. catalyst, mol. wt. distribution in relation to
9002-88-4
9003-07-0
prep'n. of, on gel-immobilized metal complex catalysts, mol. wt. distribution of

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105:43198

Immobilized β -cyclodextrin catalyst for selective synthesis of

4-hydroxybenzaldehyde.

Komiyama, Makoto; Hirai, Hidefumi (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Polym. J. (Tokyo), 18(4), 375-7 (English) 1986. CODEN: POLJB8. ISSN: 0032-3896. DOCUMENT TYPE: Journal CA Section: 33 (Carbohydrates) Section cross-reference(s): 25
 Selective synthesis of 4-HOC₆H₄CHO (I) from PhOH and CHCl₃ in aq. NaOH soln. was successfully carried out by using immobilized b-cyclodextrin catalyst, prepd. from b-cyclodextrin and epichlorohydrin. The immobilized catalyst was effectively recovered from the reaction mixt. and was repeatedly used without measurable decrease in catalytic activity. The yield (with respect to PhOH used) and the selectivity for I were 59% and 99% resp., for the 1st use of the catalyst, 66% and 100% resp., for the 2nd use, and 65% and 99% resp., for the 3rd use of the catalyst.

Keywords

hydroxybenzaldehyde selective prepn catalyst
 immobilized beta cyclodextrin catalyst
 Reimer Tiemann immobilized cyclodextrin catalyst

Index Entries

Catalysts and Catalysis
 immobilized b-cyclodextrin, for selective synthesis of
 4-hydroxybenzaldehyde
 Polymer-supported reagents
 b-cyclodextrin immobilized with epichlorohydrin, catalysts for
 selective synthesis of 4-hydroxybenzaldehyde by
 Reimer-Tiemann reaction
 Formylation catalysts
 Reimer-Tiemann, immobilized b-cyclodextrin, for selective
 synthesis of 4-hydroxybenzaldehyde
 108-95-2, reactions
 Reimer-Tiemann reaction of, selective synthesis of
 4-hydroxybenzaldehyde by, immobilized b-cyclodextrin
 catalyst for
 106-89-8, b-cyclodextrin immobilized with
 7585-39-9, immobilized with epichlorohydrin
 catalyst, for selective synthesis of 4-hydroxybenzaldehyde by
 Reimer-Tiemann reaction
 67-66-3, reactions
 reaction of, with phenol, selective synthesis of
 4-hydroxybenzaldehyde by, immobilized b-cyclodextrin
 catalyst for
 123-08-0
 selective synthesis of, by Reimer-Tiemann reaction, immobilized
 b-cyclodextrin catalyst for

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101:94462

Hydrogen fuel cell with immobilized alkaline electrolyte.
 Doniat, D.; Rouget, R. (Soc. Rech. Appl. Electrochim., Fontenay-Sous-Bois F-94120, Fr.). Comm. Eur. Communities, [Rep.] EUR, EUR 9049, 88 pp. (French) 1984. CODEN: CECED9.
 DOCUMENT TYPE: Report CA Section: 52 (Electrochemical, Radiational, and Thermal Energy Technology)
 The electrodes were made with a novel structure (a sponge Ni with a layer of M and Ni. Good elec. cond. and excellent catalyst adherence to the current collector were obtained. To lower the cost of the fuel cell, no precious-metal catalysts were used, only Raney Ni and Ag-coated C. Air-cathode performances were improved by introducing some Ag into the M and Ni layer. The matrix was preferably composed of a plastic felt (such as NORDLYS) and a porous polypropylene sheet

(such as CELGARD 3501). Thus, a high bubble point, low elec. resistivity and high electrolyte retention were obtained. With this fuel cell, a 2500-h test at <150 mA/cm² at 80° was conducted.

Keywords

silver coated carbon catalyst electrode
fuel cell alk electrolyte immobilized
hydrogen fuel cell immobilized electrolyte
nickel catalyst fuel cell

Index Entries

Fuel cells
hydrogen, immobilized alk. electrolyte in
Asbestos
Polysulfones
membranes, in hydrogen fuel cell with immobilized alk. electrolyte
Electrodes
fuel-cell, Raney nickel and silver-coated carbon
7440-44-0, uses and miscellaneous
catalyst from silver-coated, for fuel cells with immobilized alk. electrolyte
7440-22-4, uses and miscellaneous
catalysts from carbon coated with, in fuel cells for immobilized alk. electrolyte
7758-05-6
deactivation by, of alloy in fuel cell with immobilized alk. electrolyte
7440-02-0, uses and miscellaneous
electrodes, catalytic, for fuel cells with immobilized alk. electrolyte
91500-70-8
fuel cell electrodes, with immobilized alk. electrolyte
9002-84-0
in fuel cell with immobilized alk. electrolyte
1333-74-0, uses and miscellaneous
in fuel cells with immobilized alk. electrolyte
9002-86-2
membranes, in fuel cell with immobilized alk. electrolyte
9003-07-0
91609-15-3
91609-62-0
91609-87-9
91609-88-0
membranes, in hydrogen fuel cell with immobilized alk. electrolyte

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101:7686

Characteristics of polymerization and copolymerization of olefins by immobilized catalysts.

Pomogailo, A. D.; D'yachkovskii, F. S. (Otd. Inst. Khim. Fiz., Chernogolovka 142 432, USSR). Acta Polym., 35(1), 41-7 (Russian) 1984. CODEN: ACPODY. DOCUMENT TYPE: Journal CA Section:

35 (Chemistry of Synthetic High Polymers)

Ti and V compds. immobilized on polyethylene graft copolymers contg. pendant functional groups are stable catalysts for the polymn. of olefins.

The polymer substrate exerted a stabilizing influence, preventing deactivation of active centers. The concn. of active centers in immobilized catalyst systems at 313K exceeded that of nonimmobilized systems by 2-3-fold initially and by 80-250-fold after 30-min polymn. The mechanism of active center formation in immobilized catalysts in the presence of an Al compd. cocatalyst is discussed, and kinetic parameters are given for ethylene [74-85-1] homopolymn. and copolymn. with propene [115-07-1].

Keywords

immobilized Ziegler polymn catalyst
 titanium polymn catalyst immobilized
 vanadium polymn catalyst immobilized
 ethylene graft copolymer catalyst immobilization
 olefin polymn catalyst immobilized

Index Entries

Kinetics of polymerization
 of ethylene and propylene, in presence of titanium and vanadium
 compds. immobilized on ethylene graft copolymers
 Reactivity ratio in polymerization
 of ethylene with propene, in presence of titanium and vanadium
 compds. immobilized on ethylene graft copolymers
 Polymerization catalysts
 titanium and vanadium compds. immobilized on ethylene graft
 copolymers, for olefins, active center formation in
 96-10-6, uses and miscellaneous
 catalysts, contg. immobilized titanium or vanadium compds., for
 polymn. of olefins
 9010-77-9, reaction products with titanium and vanadium compds.
 24937-78-8, reaction products with titanium and vanadium compds.
 25067-33-8, reaction products with titanium and vanadium compds.
 25101-13-7, reaction products with titanium and vanadium compds.
 25134-58-1, reaction products with titanium and vanadium compds.
 25155-49-1, reaction products with titanium and vanadium compds.
 26355-13-5, reaction products with titanium and vanadium compds.
 28550-69-8, reaction products with titanium and vanadium compds.
 28550-72-3, reaction products with titanium and vanadium compds.
 53761-72-1, reaction products with titanium and vanadium compds.
 62197-35-7, reaction products with titanium and vanadium compds.
 90622-01-8, reaction products with titanium and vanadium compds.
 catalysts, for polymn. of olefins
 1271-19-8, reaction products with ethylene graft copolymers
 1686-22-2, reaction products with ethylene graft copolymers
 5593-70-4, reaction products with ethylene graft copolymers
 7550-45-0, reaction products with ethylene graft copolymers
 7632-51-1
 12083-48-6, reaction products with ethylene graft copolymers
 catalysts, for polymn. of olefins, kinetics and mechanism in relation
 to
 74-85-1, reactions
 polymn. of, in presence of titanium or vanadium compds.
 immobilized on ethylene graft copolymers, kinetics of
 115-07-1, reactions
 polymn. of, with ethylene, in presence of titanium or vanadium
 compds. immobilized on ethylene graft copolymers,
 kinetics of

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96:68000

Chemistry of crown ethers. XVII. Triphase catalysis by immobilized
 benzo-18-crown-6.

Van Zon, A.; De Jong, F.; Onwezen, Y. (K. Shell-Lab., Amsterdam,
 Neth.). Recl.: J. R. Neth. Chem. Soc., 100(11), 429-32 (English) 1981.

CODEN: RJRSDK. DOCUMENT TYPE: Journal CA Section: 22

(Physical Organic Chemistry)

Several immobilized benzo-18-crown-6 derivs. are prepd. and their
 activities as triphase catalysts are examd. in the reaction between
 Br(CH₂)₇Me (I) in PhMe and aq. KCN. In each case the reaction rate
 was proportional to the I concn. and to the amt. of catalyst and also
 depended on the KCN concn. Under nonstirred conditions the activity

per crown ether moiety was dependent on the degree of functionalization of the supporting polymer, being high for a highly substituted polystyrene-divinylbenzene resin and low for a sparingly substituted one. The beneficial effect of the high loading disappeared completely under stirred conditions. The triphase catalyst is used both with liq.-liq.-solid and with solid-solid-liq. systems and is recovered without significant loss of activity.

Keywords

triphase catalyst immobilized crown ether
substitution reaction catalyst crown ether
bromooctane substitution cyanide catalyst
phase transfer catalyst crown ether

Index Entries

Substitution reaction catalysts
immobilized crown ether, triphase, for bromooctane with
potassium cyanide
Catalysts and Catalysis
triphase-transfer, immobilized crown ether as, prepn. of
Crown compounds
ethers, immobilized, as triphase catalysts for nucleophilic
substitution reactions
Kinetics of substitution reaction
nucleophilic, of bromooctane with potassium cyanide in presence
of immobilized crown ether
60835-74-7
borohydride redn. of
14098-24-9
catalyst, for nucleophilic substitution reaction of, bromooctane with
potassium cyanide
151-50-8
nucleophilic substitution reaction of, with bromooctane, triphase
immobilized crown ether catalyst for
111-83-1
nucleophilic substitution reaction of, with potassium cyanide,
triphase immobilized crown ether catalyst for
41024-91-3
reaction of, with dihydroxybenzyl alc.
3897-89-0
reaction of, with pentaethylene glycol tosylate
9003-70-7, chloromethylated
reaction of, with sodium salt of (hydroxymethyl)benzo-crown compd.
71015-62-8
reaction of, with styrene-divinylbenzene copolymer in presence of
sodium hydride
31943-71-2
40832-22-2
71015-62-8, reaction products with chloromethylated styrene
divinylbenzene copolymers
triphase catalyst, for nucleophilic substitution reaction of
bromooctane with potassium cyanide

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102:45530

An immobilized organotin catalyst for reduction of ketones and
aldehydes.

Matlin, Stephen A.; Gandham, Permjit S. (Chem. Dep., City Univ.,
London EC1V 0HB, UK). J. Chem. Soc., Chem. Commun., (12), 798-9
(English) 1984. CODEN: JCCCAT. ISSN: 0022-4936. DOCUMENT
TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and
Condensed Benzenoid Compounds) Section cross-reference(s): 23,

29, 67

An immobilized organotin catalyst (I) was prepd. by Grignard reaction of $\text{CH}_2\text{:CH}(\text{CH}_2)_3\text{MgBr}$ with BuSnCl_3 , followed by hydrosilylation with HSiCl_3 , treatment with Corasil II silica, and subsequent methoxylation. I catalyzed the redn. of PhCOMe , PhCH_2COMe , $\text{Me}(\text{CH}_2)_8\text{CHO}$, and PhCHO to hydrocarbons in refluxing anhyd. MeOH using polymethylhydrosiloxane as the H source; redn. of the aldehydes was 5-10 times faster than that of the ketones. I was readily recovered and recycled.

Keywords

acetophenone redn organotin silica catalyst
decanal redn organotin silica catalyst

Index Entries

Reduction catalysts

immobilized dialkyltin dimethoxide, for aldehydes and ketones to hydrocarbons

Polymer-supported reagents

organotin catalysts, for redn. of ketones and aldehydes

Carbonyl compounds, reactions

redn. of, immobilized dialkyltin dimethoxide catalysts for

Siloxanes and Silicones, reactions

di-Me, redn. by, of aldehydes and ketones, immobilized dialkyltin dimethoxide catalyst for

1118-46-3

Grignard reaction of, with bromopentene

1119-51-3

Grignard reaction of, with butyltin trichloride

1067-55-6, silica-bound

catalysts, for redn. of aldehydes and ketones

94169-25-2, silica-bound

prepn of, as catalyst for redn. of aldehydes and ketones

94169-23-0

prepn. and hydrosilylation of

94169-24-1, silica-bound

prepn. and methoxylation of

94169-26-3

prepn. and reaction of, with silica

108-88-3, preparation

124-18-5

prepn. of, by redn. of aldehyde, immobilized dialkyltin dimethoxide catalyst in

100-41-4, preparation

103-65-1

prepn. of, by redn. of ketone, immobilized dialkyltin dimethoxide catalyst in

98-86-2, reactions

100-52-7, reactions

103-79-7

112-31-2

redn. of, immobilized dialkyltin dimethoxide catalyst for

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99:28596

Applications of functionalized polymers in catalysis.

Bergbreiter, D. E. (Res. Found., Texas A and M Univ., College Station, TX, USA). Report, DOE/ER/05563-T1; Order No. DE83006759, 8 pp.

Avail. NTIS From: Energy Res. Abstr. 1983, 8(8), Abstr. No. 18349

(English) 1981. DOCUMENT TYPE: Report CA Section: 67 (Catalysis,

Reaction Kinetics, and Inorganic Reaction Mechanisms)

Polymers were used as mechanistic probes to detect sol.

intermediates in heterogeneous hydrogenation of arenes (no sol. intermediates were detectable). Polystyrene-bound Ti catalysts were prepd. which show significantly different catalytic activity than their homogeneous analogs. The potential utility of polymeric reagents as cofactors to modify or accelerate conventional homogeneous catalytic reactions is demonstrated. Preliminary studies showed that sol., non-crosslinked polymers such as polyethylene possess desirable features as potential ligands for catalysts in that such polymers provide advantages normally assocd. with homogeneous and heterogeneous systems. Finally, several novel types of lanthanum complexes were prepd. which can be attached to polymers as potential catalysts for CO redn. and olefin isomerization reactions.

Keywords

polymer immobilized catalyst application
homogeneous heterogeneous catalyst activity
lanthanum complex catalyst polymer immobilized
redn catalyst lanthanum complex polymer
isomerization catalyst lanthanum complex polymer
carbon monoxide redn catalyst
alkene isomerization catalyst

Index Entries

Alkenes, reactions
isomerization of, on polymer-immobilized lanthanum complex
catalysts
Isomerization catalysts
lanthanum complexes, polymer-immobilized, for alkenes
Reduction catalysts
lanthanum complexes, polymer-immobilized, for carbon monoxide
Catalysts and Catalysis
Hydrogenation catalysts
polymer-immobilized
7439-91-0, complexes
catalysts, polymer-immobilized
630-08-0, reactions
redn. of, on polymer-immobilized lanthanum complex catalysts

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97:216807

IR spectroscopy study of complex catalysts for polymerization of olefins based on titanium(IV) chloride and AlR_2Cl immobilized on polymer supports.

Roshchupkina, O. S.; Lisitskaya, A. P.; Golubeva, N. D. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 23(5), 1208-14 (Russian) 1982. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE:

Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 67

Optimum conditions were detd. for prepn. of the title immobilized catalysts ($\text{R} = \text{Me}, \text{Et}$). Structures of the catalytically active sites were established.

Keywords

polymn catalyst active site IR
immobilized polymn catalyst active site
titanium chloride immobilized polymn catalyst
alkylaluminum chloride titanium polymn catalyst
aluminum alkyl chloride polymn catalyst

Index Entries

Infrared spectra
of polymn. catalysts, contg. titanium chloride and dialkyl aluminum
chloride immobilized on polymer supports
Alkanes, reactions
polymn. of, on polymer-immobilized titanium tetrachloride-dialkyl
aluminum chloride catalyst
Polymerization catalysts
titanium chloride-dialkyl aluminum chloride, immobilized on
polymer supports, for alkenes
9010-77-9
25134-58-1
25155-49-1
28550-69-8
28550-72-3
catalyst support, for titanium chloride-dialkyl aluminum chloride
reaction products
7550-45-0, uses and miscellaneous
catalysts, with dialkyl aluminum chloride immobilized on polymer
supports, for alkenes
96-10-6, uses and miscellaneous
1184-58-3
catalysts, with titanium tetrachloride immobilized on polymer
supports, for alkenes

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101:38885
XPS study of a molybdenum catalyst immobilized on a polymer for
phenylacetylene polymerization.
Karklins, L.; Pomogailo, A. (Inst. Org. Sint., Riga, USSR). Latv. PSR
Zinat. Akad. Vestis, Kim. Ser., (2), 218-20 (Russian) 1984. CODEN:
LZAKAM. ISSN: 0002-3248. DOCUMENT TYPE: Journal CA Section:
35 (Chemistry of Synthetic High Polymers)
The XPS investigation of a MoCl₅ catalyst immobilized on polyethylene
grafted with acrylonitrile indicated formation, during immobilization of
MoCl₅, of 3 types of reaction centers contg. Mo(V) and Mo(IV) compds.
Interaction of these centers with PhCYCH during its polymn.
increased the content of Mo(IV) and, apparently, resulted in further redn.
of Mo(IV) to Mo(III).

Keywords

molybdenum catalyst polymer immobilized
acrylonitrile graft copolymer catalyst carrier
ethylene graft copolymer catalyst carrier
XPS molybdenum polymer immobilized catalyst
phenylacetylene polymn molybdenum catalyst

Index Entries

Polymerization catalysts
molybdenum pentachloride immobilized on acrylonitrile-ethylene
graft copolymer, for phenylacetylene, XPS study of
10241-05-1
catalysts, immobilized on acrylonitrile-ethylene graft copolymer, for
polymn. of phenylacetylene, XPS study of
25134-58-1
graft, molybdenum pentachloride catalyst immobilized on, for
polymn. of phenylacetylene, XPS study of
25038-69-1
prepn. of, molybdenum pentachloride catalysts immobilized on
acrylonitrile-ethylene graft copolymer for

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105:97983

Study of immobilized catalysts. XVII. Decomposition of trichloromethyltitanium(IV) complexes fixed to the polymeric supports.

Serebryanaya, I. V.; Khrushch, N. E.; Pomogailo, A. D.; D'yachkovskii, F. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 27(2), 389-93 (Russian) 1986. CODEN: KNKTA4. ISSN: 0453-8811.

DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 67

The thermodyn. stability and high catalytic activity of the polymn. catalyst MeTiCl_3 (I) [2747-38-8] immobilized on ethylene-vinylpyridine graft copolymer [26355-13-5] were correlated with the deceleration of coordinated cleavage of Ti-C bonds in the Ti coordination sphere, leading to stabilization of active centers. The catalyst system contained 2 kinetically different I-polymer complexes, CA (20-30%) and CB (70-80%). The Ti-C bond in CB was cleaved by two distinct monomol. mechanisms: 1) a coordinated mechanism at $>10^\circ$ involving formation of CH_4 and inactive Ti(IV) compds.; and 2) a homolytic mechanism occurring at $>30^\circ$ and becoming predominant at $>75^\circ$, involving redn. of Ti(IV) to active Ti(III) and formation of CH_3 . radical. The rate const. (k) for the homolytic cleavage was $2 \cdot 10^{10} \text{e-}21,000/\text{RT s-1}$, corresponding to Ti-C bond energy 88 kJ/mol. CA decompn. occurred by the coordinated mechanism at 10-75° with $k = 5 \cdot 10^2 \text{e}10,600/\text{RTs-1}$.

Keywords

vinylpyridine copolymer support trichloromethyltitanium catalyst
polymn catalyst chloromethyltitanium polymer supported
stability organotitanium catalyst polymer supported
activity organotitanium catalyst polymer supported
titanium polymer supported catalyst stability
kinetics degradn organotitanium immobilized catalyst

Index Entries

Polymer-supported reagents
methyltitanium trichloride polymn. catalyst, on
ethylene-vinylpyridine graft copolymer, stability and activity
of
Polymerization catalysts
methyltitanium trichloride, polymer-supported, stability and activity
of
Kinetics of degradation
of methyltitanium trichloride polymn. catalyst, polymer-supported,
stability and activity in relation to
Degradation
of methyltitanium trichloride, on polymer support, mechanism of
Bond energy
carbon-titanium, in methyltitanium trichloride polymn. catalyst on
polymer support
Bond cleavage
carbon-titanium, in methyltitanium trichloride polymn. catalyst on
polymer support, kinetics and mechanism of
2747-38-8
catalysts, polymer-supported, for polymn., stability and activity of
26355-13-5
graft, methyltitanium trichloride polymn. catalyst supported on,
stability and activity of

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105:78600

Immobilized catalyst directed to synthetic control. Cross-aldol reaction.

Mukaiyama, Teruaki; Iwakiri, Hiroshi (Fac. Sci., Univ. Tokyo, Tokyo

113, Japan). Chem. Lett., (9), 1363-6 (English) 1985. CODEN: CMLTAG. ISSN: 0366-7022. DOCUMENT TYPE: Journal CA
 Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds) Section cross-reference(s): 23, 24

Cross-aldol adducts are stereoselectively formed in good yields by treating acetals or aldehydes and silyl enol ethers in a heterogeneous system with a catalytic amt. of polymer-supported trityl perchlorate. Thus, treating 1-(trimethylsiloxy)cyclohexene with PhCH(OMe)₂ in CH₂Cl₂ at -78°, in the presence the polymer-supported catalyst, afforded 86% I as an 88/12 syn-anti mixt.

Keywords

stereochem aldol condensation immobilized catalyst
 trityl perchlorate immobilized aldol catalyst
 benzaldehyde acetal aldol condensation

Index Entries

Aldol condensation catalysts
 polymer-supported trityl perchlorate, for acetals or aldehydes with silyl enol ethers
 Polymer-supported reagents
 trityl perchlorate, as catalyst for aldol reaction
 13735-81-4
 aldol reaction of, with acetal ketal, polymer-supported catalyst for
 6651-36-1
 aldol reaction of, with acetals or benzaldehyde, polymer-supported catalyst for
 31469-15-5
 aldol reaction of, with benzaldehyde acetal, polymer-supported catalyst for
 51425-53-7
 51425-54-8
 62791-22-4
 99192-67-3
 99192-68-4
 aldol reaction of, with benzaldehyde, polymer-supported catalyst for
 77-76-9
 149-73-5
 1125-88-8
 30076-98-3
 aldol reaction of, with silyl enol ether, polymer-supported catalyst for
 100-52-7, reactions
 aldol reaction of, with silyl enol ethers
 25731-20-8, polymer-supported
 catalysts, for aldol reaction of silyl enol ether with benzaldehyde
 3058-33-1, polymer-bound
 prepn. as catalyst, for cross-aldol reactions
 15839-38-0
 28981-22-8
 54322-88-2
 54322-89-3
 74209-73-7
 74209-74-8
 75391-04-7
 75391-10-5
 94123-60-1
 94123-61-2
 94123-64-5
 99192-61-7
 99192-62-8

99192-65-1
99192-66-2
prepn. of
76-84-6, polymer-bound
reaction of, with perchloric acid

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104:186884

Modification of a cation exchanger - a catalyst for the synthesis of polymerizable oligoesters.

Onishchenko, V. V.; Zadontsev, B. G.; Yaroshevskii, S. A.; Skvortsov, B. N.; Borota, M. K.; Tolda, A. P. (USSR). Reaktsionnosposob.

Oligomery i Kompozits. Materialy na ikh Osnove, M., 158-64 From:

Ref. Zh., Khim. 1985, Abstr. No. 19T454 (Russian) 1985. DOCUMENT

TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 38

Title only translated.

Keywords

catalyst oligoether oligoester synthesis
cation exchanger catalyst oligomerization
polymn catalyst cation exchanger

Index Entries

Extrusion

of cation exchanger-polypropylene blend, in prepn. of immobilized catalyst, for synthesis of oligoesters and/or oligoethers

Polyethers

Polyesters, preparation

oligomeric, prepn. of, immobilized catalyst from cation exchanger for

Polymerization catalysts

oligomerization, immobilized, from cation

exchanger-polypropylene blend, for prepn. of oligoesters

and/or oligoethers

9003-07-0

blend with cation exchanger, extrusion of, for prepn. of

immobilized catalyst, for synthesis of polymerizable

oligoesters and/or oligoethers

99550-12-6

polypropylene blend, extrusion of, for prepn. of immobilized

catalyst, for synthesis of polymerizable oligoesters and/or

oligoethers

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104:50070

Nickel-boride polymer catalyst.

De Jongh, Rudolph Otto; Van Dijk, Cornelis (Unilever N. V.; Unilever

PLC, Neth.). Eur. Pat. Appl. EP 159101 A1 23 Oct 1985, 11 pp.

DESIGNATED STATES: R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE.

(English). (European Patent Organization). CODEN: EPXXDW.

CLASS: ICM: B01J023-74. ICS: B01J021-02; C11C003-12.

APPLICATION: EP 85-200591 17 Apr 1985. PRIORITY: NL 84-1301

19 Apr 1984. DOCUMENT TYPE: Patent CA Section: 17 (Food and

Feed Chemistry)

A NiB-polymer catalyst for hydrogenation of oils such as soybean oil is prepd. by immobilizing NiB with a polymer. Thus, NiB was immobilized in polyvinylpyrrolidone to form a NiB colloid. This colloid was used in hydrogenation of soybean oil, and its activity did not change after 3 mo storage at room temp.

Keywords

nickel boride immobilized hydrogenation catalyst
polyvinylpyrrolidone nickel boride hydrogenation catalyst

Index Entries

Oils

hydrogenation catalysts for, immobilized nickel boride as
Soybean oil
hydrogenation of, with immobilized nickel boride catalyst
Hydrogenation catalysts
immobilized nickel boride as
12619-90-8
hydrogenation catalysts contg. immobilized
7440-02-0, uses and miscellaneous
hydrogenation catalysts contg., immobilized nickel boride as
7791-20-0
16940-66-2
17638-48-1
immobilized nickel boride hydrogenation catalyst manuf. with
9003-39-8
nickel boride immobilization on, as hydrogenation catalyst

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104:6227

Gel-immobilized catalytic systems for propylene dimerization
containing organophosphorus ligands.
Potapov, G. P.; Shepelin, V. A. (State Univ. Syktyvkar, Syktyvkar
167001, USSR). React. Kinet. Catal. Lett., 28(2), 287-93 (English)
1985. CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT TYPE:
Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section
cross-reference(s): 23, 39
In the catalytic dimerization of propylene in the presence of macromol.
Ni complexes contg. organophosphorus ligands, the substitution of
alkoxy groups of P atoms in the polymeric ligands does not affect the
dimer compn. but permits, within certain limits, control of catalyst
activity.

Keywords

propylene dimerization gel immobilized catalyst
nickel complex catalyst propylene dimerization
organophosphorus ligand catalyst propylene dimerization

Index Entries

Dimerization catalysts

gel-immobilized, contg. organophosphorus ligands, for propylene
7440-02-0, complexes with ethylene-propene-dicyclopentadiene
rubber contg. phosphorus ligands
catalyst, gel-immobilized, for dimerization of propene
563-43-9, uses and miscellaneous
catalysts, contg. gel-immobilized nickel complexes contg.
organophosphorus ligands, for dimerization of propene
7723-14-0, ethylene-propene-dicyclopentadiene rubber deriv., nickel
complexes
25034-71-3, phosphorus deriv., nickel complexes
catalysts, gel-immobilized, for dimerization of propene
25264-93-1
27236-46-0
prepn. of, by dimerization of propene in presence of
gel-immobilized catalysts contg. organophosphorus
ligands

16813-72-2

prepn. of, in presence of gel-immobilized catalyst contg.
organophosphorus ligands

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102:221246

Heterophase polymerization of acetylenic monomers in the presence of immobilized molybdenum complexes.

Pomogailo, A. D.; Kiyashkina, Zh. S.; Kuzaev, A. I.; Echmaev, S. B.; Ivleva, I. N.; D'yachkovskii, F. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Vysokomol. Soedin., Ser. A, 27(4), 707-14 (Russian) 1985.

CODEN: VYSAAF. ISSN: 0507-5475. DOCUMENT TYPE: Journal

CA Section: 35 (Chemistry of Synthetic High Polymers)

Phenylacetylene [536-74-3], propargyl alc. [107-19-7], and propargyl bromide [106-96-7] were polymd. in the presence of catalysts comprising complexes of Mo immobilized on the surface of polyethylene grafted with acrylonitrile, 4-vinylpyridine, allyl alc., propargyl alc., or acrylic acid. Active centers, responsible for the formation of high-mol.-wt. poly(phenylacetylene) (I) [25038-69-1] (no. av. mol. wt. 7000-10,000), were formed in a rapid reaction of the monomer with immobilized Mo(V) or Mo(IV) and represented diamagnetic ions Mo(IV). I having no.-av. mol. wt. 1000-1400 was formed by insertion of the monomer into the Mo-C bonds; the total no. of such centers constituted 5-8 mol% of the total immobilized Mo. Catalysts comprising complexes of Mo immobilized on polymer support could be regenerated by chlorination of the reduced Mo. The use of such catalysts facilitated removal of catalyst residue from the polymer.

Keywords

acetylene deriv polymn molybdenum catalyst
molybdenum polymer support polymn catalyst
complex molybdenum polymer polymn catalyst
ethylene graft copolymer catalyst support

Index Entries

Polymerization catalysts
complexes of molybdenum immobilized on ethylene graft
copolymers, for acetylenic monomers
Polymer-supported reagents
ethylene graft copolymers contg. immobilized molybdenum,
catalysts, for polymn. of acetylenic monomers
Kinetics of polymerization
of phenylacetylene, in presence of immobilized molybdenum
catalysts
Polymerization
of phenylacetylene, in presence of immobilized molybdenum
catalysts, mechanism of
10241-05-1
catalysts, immobilized on ethylene graft copolymers, polymn. of
acetylenic monomers in presence of
9010-77-9
25134-58-1
26355-13-5
28550-72-3
73501-92-5
graft, catalysts, contg. molybdenum pentachloride, polymn. of
acetylenic monomers in presence of
25038-69-1
manuf. of, catalysts for, immobilized molybdenum complexes as
106-96-7
107-19-7

polymn. of, in presence of immobilized molybdenum catalysts
536-74-3

polymn. of, in presence of immobilized molybdenum catalysts,
kinetics and mechanism of

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102:210108

Catalysts for hydrogenation of aromatic compounds.

Jones, Richard A. (University of Texas System, Japan). U.S. US
4506030 A 19 Mar 1985, 6 pp. (English). (United States of America).

CODEN: USXXAM. CLASS: IC: C07F004-02. NCL: 502155000.

APPLICATION: US 84-581422 17 Feb 1984. DOCUMENT TYPE:

Patent CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms) Section cross-reference(s): 25, 45

A novel transition metal catalyst which has a phosphido-type linkage is
much less subject to metal loss during operations because of its
greater bond strength. This catalyst will hydrogenate unsatd.
hydrocarbons under milder conditions than most prior art catalysts. The
catalyst is prepd. by reacting lithiated tert-Bu phosphine with a
chloromethylated divinylbenzene-polystyrene copolymer and then
reacting the product polymer with a transition metal carbonyl (Co(CO)₄I
or Rh(CO)₂Cl₂).

Keywords

hydrogenation catalyst arom polymer immobilized
rhodium phosphine complex polymer catalyst
cobalt phosphine complex polymer catalyst
phosphine transition metal polymer catalyst
transition metal complex catalyst hydrogenation

Index Entries

Transition metals, uses and miscellaneous

catalysts, polymer-immobilized by phosphido-type bond, for
hydrogenation of arom. compds.

Polymers, uses and miscellaneous

catalysts, transition metal phosphine complexes immobilized on
support of

Aromatic compounds

hydrogenation of, on transition metal phosphine complex catalysts
immobilized on polymer support

Hydrogenation catalysts

transition metal complexes with phosphine-bonded polymer, for
arom. compds.

9003-70-7, chloromethylated, reaction products with lithium tert-Bu
phosphine and transition metal carbonyl complexes

14523-22-9, reaction product with polymer-immobilized lithium tert-Bu
phosphine

15976-97-3, reaction product with polymer-immobilized lithium tert-Bu
phosphine

catalysts, for hydrogenation of arom. compds.

7440-16-6, uses and miscellaneous

7440-48-4, uses and miscellaneous

catalysts, polymer-immobilized by phosphido-type bond, for
hydrogenation of arom. compds.

67877-34-3

reaction of, in catalyst prepn. by immobilizing transition metal
complexes on polymer supports

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101:7684

Supermolecular structure of supports for gel-immobilized catalytic

systems.

Budantseva, T. V.; Litvinov, I. A.; Smetanyuk, V. I.; Kabanov, V. A. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, USSR). Vysokomol. Soedin., Ser. A, 26(3), 588-93 (Russian) 1984. CODEN: VYSAAF. ISSN: 0507-5475. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 36, 39, 67 Electron microscopy photographs of poly(4-vinylpyridine) (I)-grafted ethylene-ethylidenenorborne-propene rubber used for immobilization of Ni²⁺ catalysts showed that I was dispersed in the rubber matrix as globular inclusions 1000-4000 Å in size. Etching with OsO₄ showed that the inclusions in turn contained structural elements 50-200 Å in size. The metal was sorbed in the graft-phase inclusions, leading to a 10-15% decrease in globule size and to an increase in the size of the internal structural elements to 100-350 Å. Such catalyst systems are of interest for dimerization and polymn. of olefins.

Keywords

morphol polymer support catalyst
vinylpyridine grafted rubber catalyst support
EPDM rubber grafted catalyst support
nickel catalyst polymer immobilized
dimerization catalyst polymer immobilized
polymn catalyst polymer immobilized
olefin polymn catalyst immobilized

Index Entries

Alkenes, reactions
dimerization and polymn. of, morphol. of polymer supports for catalysts for
Dimerization catalysts
Polymerization catalysts
nickel acetylacetonate, for olefins, morphol. of
poly(vinylpyridine)-grafted EPDM rubber for immobilization of
Polymer morphology
of poly(vinylpyridine)-grafted EPDM rubber, for immobilization of nickel catalysts
3264-82-2
catalysts, morphol. of poly(vinylpyridine)-grafted EPDM rubber for immobilization of
55554-74-0
graft, morphol. of, for support for nickel catalyst systems

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99:88640

Study of immobilized catalysts. VI. Study of titanium complexes fixed on polymer supports.

Karklins, L.; Pomogailo, A. D.; Lisitskaya, A. P.; Borod'ko, Yu. G. (Inst. Org. Sint., Riga, USSR). Kinet. Katal., 24(3), 657-62 (Russian) 1983. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal

CA Section: 35 (Chemistry of Synthetic High Polymers)

The formation of resistant-to-redn. aggregates of Ti(IV) during immobilization of Ti(IV) compds. on the surface of polymers obtained by grafting various vinyl monomers (acrylic acid, acrylonitrile, allylamine, etc.) on polyethylene was demonstrated by IR and XPS. In the binary catalyst comprising TiCl₄ immobilized on acrylonitrile-ethylene graft copolymer [25134-58-1] and Et₂AlCl [96-10-6], redn. of Ti(IV) to Ti(III) and Ti(II) occurred at 293 and 343 K, resp. High activity and stability of catalysts contg. Ti compds. immobilized on polymers was attributed to retardation of the redn. of Ti(IV).

Keywords

titanium catalyst activity polymn support
 immobilization titanium compd polymer support
 polymn catalyst immobilized titanium compd
 redn titanium immobilized polym catalyst
 ethylene polymn immobilized titanium catalyst

Index Entries

Reduction

of titanium compds. in organoaluminum compd.-contg. polymn.
 catalysts, effect of immobilization on polymer supports on
 Polymerization catalysts
 titanium tetrachloride immobilized on polymer support and
 organoaluminum compds., for ethylene, activity of, IR and
 x-ray photoelectron spectroscopic study of
 7550-45-0, uses and miscellaneous
 catalysts, contg. organoaluminum compd. and polymer support, for
 polymn. of ethylene, redn. of titanium in, IR and x-ray
 photoelectron spectroscopic study of
 96-10-6, uses and miscellaneous
 1184-58-3
 catalysts, contg. titanium tetrachloride immobilized on polymer
 support, for polymn. of ethylene, redn. of titanium in, IR and
 x-ray photoelectron spectroscopic study of
 9010-77-9
 25134-58-1
 26355-13-5
 28550-69-8
 28550-72-3
 62197-34-6
 62197-35-7
 graft, reaction of, with titanium tetrachloride, in immobilized
 polymn. catalyst formation, IR and x-ray photoelectron
 spectroscopic study of
 9002-88-4
 prepn. of, catalysts for, polymer-immobilized titanium tetrachloride
 and organoaluminum compds. as, activity of, IR and x-ray
 photoelectron spectroscopic study of

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96:218285

Possibility for the use of Schiff bases during the synthesis of
 gel-immobilized catalytic systems.
 Potapov, G. P.; Fedorova, E. I.; Malygina, O. A.; Popov, V. G.;
 Smetanyuk, V. I. (Syktyvkar. Gos. Univ., Syktyvkar, USSR). Vysokomol.
 Soedin., Ser. B, 24(3), 181-4 (Russian) 1982. CODEN: VYSBAI.
 ISSN: 0507-5483. DOCUMENT TYPE: Journal CA Section: 35
 (Chemistry of Synthetic High Polymers)
 The title catalysts were prepd. by treating brominated SKEPT rubber
 with Na derivs. of Schiff bases, treating the reaction product with a
 heptane soln. of $TiCl_4$, washing with abs. heptane for removal of free
 $TiCl_4$, and reacting the resulting polymeric adducts with iso-Bu₃Al
 [100-99-2] or iso-Bu₂AlCl [1779-25-5]. The Schiff bases were prepd.
 from salicylaldehyde and H₂NCH₂CH₂NH₂, HOCH₂CH₂NH₂, or MeNH₂.
 Polymn. of ethylene in the presence of the above catalysts indicated
 highest activity of the HOCH₂CH₂NH₂-derived compd. Catalysts
 derived from iso-Bu₃Al were more active than those derived from
 iso-Bu₂AlCl.

Keywords

ethylene polymn catalyst activity
 titanium Ziegler catalyst immobilized

Schiff base deriv catalyst support
rubber SKEPT deriv catalyst support

Index Entries

Schiff bases

reaction products with brominated SKEPT rubber, titanium Ziegler catalysts immobilized on, for polymn. of ethylene, prepn.

and activity of

Polymerization catalysts

Ziegler, immobilized on SKEPT rubber contg. pendant Schiff

bases, for ethylene, prepn. and activity of

Rubber, synthetic

dicyclopentadiene-ethylene-propene, brominated, reaction

products with Schiff bases, titanium Ziegler catalysts

immobilized on, for polymn. of ethylene, prepn. and activity

of

7550-45-0, uses and miscellaneous

catalysts, contg. diisobutylaluminum chloride or triisobutylaluminum,

immobilized on SKEPT rubber contg. pendant Schiff

bases, for polymn. of ethylene, prepn. and activity of

100-99-2, uses and miscellaneous

1779-25-5

catalysts, contg. titanium tetrachloride, immobilized on SKEPT

rubber contg. pendant Schiff bases, for polymn. of ethylene,

prepn. and activity of

9002-88-4

prepn. of, catalysts for, titanium Ziegler catalysts immobilized on

SKEPT rubber contg. pendant Schiff bases, prepn. and

activity of

94-93-9, sodium derivs., reaction products with brominated SKEPT

rubber

1952-38-1, sodium derivs., reaction products with brominated SKEPT

rubber

3117-65-5, sodium derivs., reaction products with brominated SKEPT

rubber

25034-71-3, brominated, reaction products with Schiff bases

titanium Ziegler catalysts immobilized on, for polymn. of ethylene,

prepn. and activity of

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96:121925

Immobilization of a homogeneous macromolecular copper catalyst for the oxidative coupling of phenols.

Verlaan, J. P. J.; Bootsma, J. P. C.; Challa, G. (Lab. Polym. Chem.,

State Univ. Groningen, Groningen 9747 AG, Neth.). J. Mol. Catal.,

14(2), 211-18 (English) 1982. CODEN: JMCADS. ISSN: 0304-5102.

DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic

Chemistry)

In order to combine the advantages of both homogeneous and

heterogeneous catalysis, an immobilized, macromol. Cu catalyst was

prepd. by radical graft copolymn. of styrene and 4-vinylpyridine on

nonporous SiO₂ spheres and subsequent complexation of CuCl₂ with

these grafted macromol. pyridine ligands. The oxidative coupling of

2,6-disubstituted phenols was chosen to test the catalytically active

species, i.e., dihydroxo-bridged Cu dimers. The immobilized

polymeric catalysts show a remarkable activity: reaction rates of 70%

compared to nonbound macromol. analogs were achieved. Moreover,

they can easily be reused several times without loss of activity, while

the mechanism of the coupling reaction is not influenced.

Keywords

oxidn coupling phenol catalyst

copper polymer silica catalyst

Index Entries

Coupling reaction catalysts

immobilized copper deriv., for phenols

Phenols, reactions

oxidative coupling reaction of, over immobilized copper catalyst

Coupling reaction

Kinetics of coupling reaction

oxidative, of phenols over immobilized copper deriv.

12125-21-2, immobilized on silica-bound copolymer

26222-40-2, silica-bound, reaction product with cupric chloride and sodium hydroxide

catalyst, for oxidative coupling reaction of phenols

128-39-2

576-26-1

2432-11-3

oxidative coupling reaction of, immobilized copper catalyst for

81057-18-3, silica-bound

radical initiator, for styrene copolymn. with vinylpyridine

7447-39-4, reactions

reaction of, with (immobilized) copolymer, oxidative coupling

catalyst from

26222-40-2

reaction of, with copper dichloride and sodium hydroxide

7631-86-9, reactions

reaction of, with nitrobenzyltrichlorosilane

51382-56-0

reaction of, with silica

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105:85754

Catalysis by heteropolyacids-VIII. Immobilization of Keggin-type heteropolyacids on poly(4-vinylpyridine).

Nomiya, Kenji; Murasaki, Hiroyuki; Miwa, Makoto (Fac. Eng., Seikei Univ., Musashino 180, Japan). Polyhedron, 5(4), 1031-3 (English)

1986. CODEN: PLYHDE. ISSN: 0277-5387. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Anchoring of a Keggin-type heteropolyacid (HPA) to a polymeric support and the effect of heterogenization on the HPA catalysis of the oxidn. of a primary diol were studied. A colored HPA such as H₆[Co(II)W₁₂O₄₀] (blue green), H₄[SiMo₁₂O₄₀] (yellow) or H₃[PMo₁₂O₄₀] (yellow), as the Keggin-type HPA and poly(4-vinylpyridine) as a polymeric support were used. The anchoring of H₆[Co(II)W₁₂O₄₀] led to a markedly increased stability of the oxidn. catalyst.

Keywords

oxidn catalyst immobilized heteropoly acid

Keggin heteropoly immobilized catalyst

diol oxidn immobilized catalyst

Index Entries

Heteropoly acids

catalysts, immobilized on polyvinylpyridine for diol oxidn.

Oxidation catalysts

heteropoly acids immobilized on polyvinylpyridine, for diols

Glycols, reactions

oxidn. of, immobilized heteropolyacid catalysts for

25232-41-1

catalysts, heteropoly acids immobilized on, for oxidn. of diols

12026-57-2
12027-12-2
103881-10-3
catalysts, immobilized on polyvinylpyridine for oxidn. of diols
110-63-4, reactions
oxidn. of, immobilized heteropolyacid catalysts for

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105:21156
Gas chromatographic determination of thiocyanate ion in biological fluids using immobilized phase-transfer catalyst for derivatization. Chikamoto, Takeji; Maitani, Takeshi (Kyoto Prefect. Inst. Hyg. Environ. Sci., Kyoto 612, Japan). Anal. Sci., 2(2), 161-4 (English) 1986. CODEN: ANSCEN. DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods)
A new gas chromatog. method was developed for the detn. of thiocyanate ion in biol. fluids. Fluid sample solns. deproteinized with acetone or MeOH were centrifuged. After evapn. of the org. solvent of the supernatant by a rotary evaporator, thiocyanate ion was ethylated with Et iodide in an immiscible aq. phase-org. phase system by using an immobilized phase-transfer catalyst. The resulting Et thiocyanate was detd. by gas chromatog. on a 20% polyethylene glycol 20 M column. Either a flame ionization detector (FID) or a flame thermionic detector (FTD) was used. The method was capable of detg. thiocyanate ion concns. in the range of 5-40 mg/mL with the FID and 0.05-20 mg/mL with the FTD. The detection limits were 1 mg/mL with the FID and 0.01 mg/mL with the FTD. The recoveries of thiocyanate ion added to cow's milk, human saliva, and human urine samples were >92% with good repeatability.

Keywords

gas chromatog thiocyanate biol fluid
immobilized phase transfer catalyst thiocyanate

Index Entries

Body fluid
Milk analysis
thiocyanate detn. in, by derivatization with immobilized phase-transfer catalyst and gas chromatog.
Saliva
Urine analysis
thiocyanate detn. in, of humans by derivatization with immobilized phase-transfer catalyst and gas chromatog.
302-04-5, analysis
detn. of, in biol. fluids by derivatization with immobilized phase-transfer catalyst and gas chromatog.
31250-18-7
in thiocyanate detn. in biol. fluids by gas chromatog.
1310-58-3, analysis
thiocyanate detn. in biol. fluids by immobilized phase-transfer catalyst and gas chromatog. response to

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102:114084
Autoxidation of thiols with cobalt(II)phthalocyanine tetrasodium sulfonate attached to poly(vinylamine), 6. Immobilized catalysts by crosslinking of poly(vinylamine). Brouwer, Wilfried M.; Traa, Piet A. M.; De Weerd, Teun J. W.; Piet, Pieter; German, Anton L. (Lab. Polym. Chem., Eindhoven Univ. Technol., Eindhoven 5600 MB, Neth.). Angew. Makromol. Chem., 128, 133-47 (English) 1984. CODEN: ANMCBO. ISSN: 0003-3146.

DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)

Poly(vinylamine) (I), being both carrier and promotor of the thiol oxidn. catalyst tetra-Na Co(II)phthalocyaninetetrasulfonate (II) [14586-48-2], was crosslinked with a,a'-dichloro-p-xylene, thus yielding porous hydrophilic networks. The effects of exptl. parameters (e.g., stirring speed, particle size, degree of crosslinking, distribution of catalytic sites of II in the catalyst particles, pH, temp., and thiol concn. were investigated. Reaction rates obsd. for the immobilized catalyst systems appeared to be 4-30 times lower as compared with the water-sol. polymeric catalyst system (I-II) but still higher than those of the polymer-free (II-amine) catalyst. At a stirring speed of $\sim 3 \times 10^3$ rpm thiol oxidn. is limited by intraparticle diffusion and not by mass transfer from the bulk to the catalyst particles. Accordingly, an uncrosslinked polymeric catalyst anchored to silica, with catalytic sites situated close to the particle surface, exhibited comparatively high activity. (I.e., only 4 times lower than the sol. polymeric catalyst). In addn., the heterogeneous catalyst systems showed a kinetic behavior resembling that of the sol. polymeric thiol oxidn. catalyst.

Keywords

cobalt phthalocyanine thiol oxidn catalysis
polymer immobilized thiol oxidn catalyst
crosslinking polymer immobilized cobalt phthalocyanine
silica immobilized thiol oxidn catalyst

Index Entries

Crosslinking

of cobalt phthalocyanine-immobilized polymer supports, thiol oxidn. in relation to

Kinetics of oxidation

of thiols, on polymer-immobilized cobalt phthalocyanine

Thiols, reactions

oxidn. of, polymer-immobilized cobalt phthalocyanine catalysts for
Oxidation catalysts

polymer-immobilized cobalt phthalocyanine, for thiols, effect of
crosslinking on

14586-48-2

catalysts, polymer-immobilized, for thiol oxidn., effect of
crosslinking on

26336-38-9

functionalized silica treated with, immobilization of cobalt
phthalocyanine on, as catalysts in thiol oxidn., effect of
crosslinking on

95179-06-9

immobilization of cobalt phthalocyanine on, as catalysts in thiol
oxidn., effect of crosslinking on

7631-86-9, uses and miscellaneous

silane-functionalized, poly(vinyl amine)-treated; immobilization of
cobalt phthalocyanine on, as catalysts in thiol oxidn., effect
of crosslinking on

2530-83-8

silica functionalized with, poly(vinyl amine)-cobalt phthalocyanine
complex immobilized on, as catalysts in thiol oxidn.

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100:210511

Cationic oligomerization of n-vinyl butyl ether in the presence of
gel-immobilized Lewis acids.

Potapov, G. P. (State Univ., Syktyvkar, USSR). React. Kinet. Catal.
Lett., 23(3-4), 307-12 (English) 1983. CODEN: RKCLAU. ISSN:
0304-4122. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of

Synthetic High Polymers) Section cross-reference(s): 67
 Kinetics showed that the catalytic activity of Lewis acids immobilized in swollen granules of dicyclopentadiene-ethylene-Me methacrylate graft copolymer [90216-25-4] in oligomerizing Bu vinyl ether [111-34-2] decreased in the order $\text{SnCl}_4 > \text{SnCl}_2 > \text{TiCl}_4 > \text{FeCl}_3$.

Keywords

catalyst oligomerization vinyl ether
 Lewis acid catalyst oligomerization
 dicyclopentadiene copolymer support catalyst
 ethylene copolymer support catalyst
 methacrylate copolymer support catalyst
 iron chloride catalyst oligomerization
 titanium chloride catalyst oligomerization
 tin chloride catalyst oligomerization

Index Entries

Lewis acids
 catalysts, gel-immobilized, for oligomerization of Bu vinyl ether
 Kinetics of polymerization
 cationic, of Bu vinyl ether, in presence of gel-immobilized Lewis acids
 Polymerization catalysts
 oligomerization, cationic, Lewis acids, gel-immobilized, for Bu vinyl ether
 7550-45-0, uses and miscellaneous
 7646-78-8, uses and miscellaneous
 7705-08-0, uses and miscellaneous
 7772-99-8, uses and miscellaneous
 catalysts, gel-supported, for oligomerization of Bu vinyl ether
 90216-25-4
 graft, support for catalysts for oligomerization of vinyl ethers
 111-34-2
 oligomerization of, cationic catalysts for

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100:177703

Resin-immobilized photocatalyst for visible light-induced hydrogen evolution.

Toshima, Naoki; Yamada, Yutaka; Ishiyama, Junya; Hirai, Hidefumi (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Nippon Kagaku Kaishi, (2), 368-71 (Japanese) 1984. CODEN: NKAKB8. ISSN: 0369-4577.

DOCUMENT TYPE: Journal CA Section: 52 (Electrochemical, Radiational, and Thermal Energy Technology) Section

cross-reference(s): 38, 49, 67, 74

Resin-immobilized colloidal Pt catalysts were prepd. by refluxing the anion-exchange resin and chelate resin-hexachloroplatinate(IV) complexes in aq. EtOH. The catalysts were active for visible light-induced H evolution in an EDTA [60-00-4]/Ru(bpy)₃²⁺ [15158-62-0]/methylviologen MV²⁺ [1910-42-5] aq. soln., where (bpy = 2,2'-bipyridine). Ternary photocatalyst was prepd. by further immobilization of Ru(bpy)₃²⁺ and MV²⁺ on the chelate resin-immobilized Pt catalyst with the electrostatic force. Irradn. of the ternary photocatalyst in aq. soln. of Na salt of EDTA resulted in H evolution. The H evolution rate depended on the pH of the soln.

Keywords

solar energy hydrogen manuf catalyst
 resin immobilized platinum photocatalyst
 EDTA ruthenium bipyridine hydrogen manuf
 methylviologen photocatalyst hydrogen manuf

Index Entries

Energy

solar, resin-immobilized catalyst for hydrogen manuf. by
7440-06-4, uses and miscellaneous
catalysts, resin-immobilized, for light-induced hydrogen manuf.
1910-42-5
15158-62-0
hydrogen manuf. in aq. EDTA-methylviologen-, resin-immobilized
platinum catalyst for
60-00-4, uses and miscellaneous
hydrogen manuf. in aq. methylviologen-ruthenium bipyridinium
complex-, resin-immobilized platinum catalyst for
1333-74-0, preparation
manuf. of, resin-immobilized photocatalyst for
60177-39-1
65405-49-4
photocatalyst immobilized in, platinum, for hydrogen manuf.

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99:44045 Correction of: 97:61676
Silacrowns, a new class of immobilizable phase transfer catalysts.
Arkles, Barry; Peterson, William R., Jr.; King, Kevin (Petrarch Syst.
Res. Lab., Bristol, PA 19007, USA). ACS Symp. Ser., 192 (Chem.
Modif. Surf. Catal. Electrocatal.), 281-92 (English) 1982. CODEN:
ACSMC8. ISSN: 0097-6156. DOCUMENT TYPE: Journal CA
Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
Mechanisms) Section cross-reference(s): 22, 29
A new class of compds., macrocyclic polyethylenoxysilanes,
(silacrowns) were prepd. which demonstrate phase transfer catalytic
properties. An alkoxy functional silacrown was immobilized in a
single-step reaction on a siliceous support. The immobilized silacrown
also demonstrates phase transfer catalytic properties. A functionalized
onium phase transfer catalyst was also prepd. that reacts directly with a
siliceous support and is catalytically active.

Keywords

silacrown immobilized phase transfer catalyst
onium phase transfer immobilized catalyst

Index Entries

Substitution reaction catalysts
nucleophilic, silacrowns immobilized on siliceous supports as
Crown compounds
ethers, sila-, catalysts, immobilized phase transfer
Catalysts and Catalysis
phase-transfer, silacrowns immobilized on siliceous support as
70851-49-9
83890-22-6
83890-23-7
83890-24-8
83890-25-9
83890-26-0
83890-27-1
prepn. and catalytic properties of
83890-28-2
prepn. and use as immobilized phase transfer catalysts
82985-34-0
prepn. of
25322-68-3
reaction of, with dimethyldimethoxysilane in silacrown prepn.

1112-39-6
 reaction of, with polyethylene glycols in silacrown prepn.
 5507-44-8
 reaction of, with polyethylene glycols, in silacrown prepn.
 110-63-4, reactions
 4792-15-8
 reaction of, with vinylmethyldiethoxysilane in silacrown prepn.
 57-12-5, reactions
 substitution reaction of, with benzyl bromide and related compds. in
 presence of immobilized silacrown catalysts
 71-50-1, reactions
 16984-48-8, reactions
 substitution reaction of, with benzyl bromide in presence of
 silacrown immobilized catalysts
 100-39-0
 substitution reaction of, with cyanide in presence of immobilized
 silacrown catalysts
 100-44-7, reactions
 106-95-6, reactions
 111-83-1
 substitution reaction of, with cyanide in presence of silacrown
 immobilized catalysts

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98:124985
 Hydrogenation using chitin- and chitosan-immobilized metal catalysts.
 Arena, Blaise J. (UOP Inc. , USA). U.S. US 4367355 A 4 Jan 1983, 4
 pp. Cont.-in-part of U.S. 4,274,980. (English). (United States of
 America). CODEN: USXXAM. CLASS: IC: C07C005-02;
 C07C005-03; C07C005-08. NCL: 585269000. APPLICATION: US
 81-237030 23 Feb 1981. PRIORITY: US 79-83926 11 Oct 1979.
 DOCUMENT TYPE: Patent CA Section: 21 (General Organic
 Chemistry) Section cross-reference(s): 67
 Group VIII metals immobilized on an aminated polysaccharide in a
 highly dispersed state are active catalysts for the hydrogenation of
 unsatd. org. compds. Chitin and chitosan are preferred supports, with
 Pt and Pd among the more active Group VIII metals in hydrogenation.
 Pt/chitin contg. 0.25% Pt was used for the hydrogenation of 1-heptene
 at 175° and 700 psig for 1.5 h. The product contained 1-heptene 36.5,
 n-heptane 49.6, trans- and cis-3-heptene 1.1, trans-2-heptene 5.0,
 cis-2-heptene 2.8, and unidentified material 5%.

Keywords

hydrogenation catalyst chitin chitosan
 unsatd org compd hydrogenation catalyst
 heptene hydrogenation catalyst
 platinum chitin chitosan hydrogenation catalyst
 palladium chitin chitosan hydrogenation catalyst

Index Entries

Hydrogenation catalysts
 Group VIII metals supported on chitin or chitosan, for unsatd. org.
 compds.
 Polysaccharides, uses and miscellaneous
 chitin and chitosan, support for Group VIII metal hydrogenation
 catalyst
 1398-61-4
 9012-76-4
 Group VIII metal catalyst supported on, for hydrogenation of
 unsatd. org. compds.
 7440-05-3, uses and miscellaneous
 catalyst, supported on chitin or chitosan, for hydrogenation of

unsatd. org. compds.
 7440-06-4, uses and miscellaneous
 catalyst, supported on chitin, for hydrogenation of unsatd. org.
 compds.
 592-76-7
 hydrogenation of, platinum-chitin catalyst for
 142-82-5, preparation
 prepn. of, by hydrogenation of heptene, platinum-chitin catalyst for

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98:35009

Effect of the molecular mobility of chains in macrocomplexes on
 catalytic properties of immobilized systems.
 Pomogailo, A. D.; Irzhak, V. I.; Burikov, V. I.; D'yachkovskii, F. S.;
 Enikolopyan, N. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Dokl.
 Akad. Nauk SSSR, 266(5), 1160-3 [Chem.] (Russian) 1982. CODEN:
 DANKAS. ISSN: 0002-3264. DOCUMENT TYPE: Journal CA
 Section: 35 (Chemistry of Synthetic High Polymers)
 The rate consts. of monomol. (kd) and bimol. (kd') deactivation of
 polymn. catalysts comprising reaction products of VCl₄ with
 styrene-a,b,b-trifluorostyrene copolymer [29154-78-7] or
 a-bromostyrene-styrene copolymer [78407-50-8] and an
 organoaluminum compd. were kd = 0.9 × 10⁻³ s⁻¹, kd' = 0.95 × 10³
 Lmol⁻¹s⁻¹ and kd = 1.2 × 10⁻³ s⁻¹, kd' = 1.3 × 10³ Lmol⁻¹s⁻¹, resp.,
 compared to kd = 2.2 × 10⁻³ s⁻¹ and kd' = 1.93 × 10³ Lmol⁻¹s⁻¹ for a
 VCl₄-Et₂AlCl [96-10-6] model system. This difference in deactivation
 rates resulting from restricted mobility of catalysts on polymer carriers
 was reflected in faster rates of polymn. of ethylene [74-85-1]. Even
 faster rates of ethylene polymn. were obtained in the presence of
 similar catalysts immobilized on polymers which were insol. in the
 polymn. medium (the former catalysts were sol. in benzene in which
 ethylene was polymd.).

Keywords

mol mobility carrier catalyst activity
 ethylene polym catalyst activity
 vanadium tetrachloride polymer salt catalyst
 titanium tetrachloride polymer salt catalyst
 immobilization polymn catalyst activity

Index Entries

Chains, chemical
 mobility of, of polymer carriers for titanium-aluminum and
 vanadium-aluminum polymn. catalysts, catalyst activity in
 relation to
 Kinetics of polymerization
 of ethylene, in presence of catalysts immobilized on polymer
 carriers, carrier mobility in relation to
 Polymerization catalysts
 transition metal halide-diethylaluminum chloride immobilized on
 polymer carriers, for ethylene, activity of, carrier mobility in
 relation to
 7632-51-1, reaction products with halostyrene-styrene copolymer
 carriers
 9003-53-6, chloromethylated, reaction products with vanadium
 tetrachloride
 29154-78-7, reaction products with transition metal halides
 68812-67-9, graft, reaction products with titanium tetrachloride
 78407-50-8, reaction products with transition metal halides
 84248-15-7, graft, reaction products with titanium tetrachloride
 catalysts, contg. diethylaluminum chloride, for polymn. of ethylene,
 activity of

7550-45-0, reaction products with halostyrene copolymer or poly(vinylpyridine) carriers
catalysts, contg. diethylaluminum chloride, for polymn. of ethylene, activity of, carrier mobility in relation to
25232-41-1, reaction products with titanium tetrachloride
catalysts, contg. diethylaluminum chloride, for polymn. of ethylene, activity of, chain mobility in relation to, temp. effect on
96-10-6, uses and miscellaneous
catalysts, contg. transition metal halides immobilized on copolymer carriers, for polymn. of ethylene, activity of, carrier mobility in relation to
74-85-1, reactions
polymn. of, kinetics of, in presence of polymer-immobilized catalysts, polymer mol. mobility in relation to
9002-88-4
prepn. of, vanadium-aluminum or titanium-aluminum catalysts immobilized on polymer carriers for, activity of, carrier mobility in relation to

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104:40544

Mechanism of oxidation of a sulfide ion and cysteine by molecular oxygen in aqueous medium on iminodiacetate complexes of manganese(II) immobilized on Silochrome.
Gombosuren, O.; Berentsveig, V. V.; Rudenko, A. P. (Mosk. Gos. Univ., Moscow, USSR). Vestn. Mosk. Univ., Ser. 2: Khim., 26(6), 588-92 (Russian) 1985. CODEN: VMUKA5. ISSN: 0579-9384. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Oxygen absorption kinetics were studied in solns. contg. S²⁻ or cysteine in the presence of immobilized Mn(II) iminodiacetate. The S²⁻ or cysteine coordinates to Mn(II) and undergoes oxidn. by mol. O₂.

Keywords

oxidn catalyst cysteine mol oxygen
manganese iminodiacetate immobilized oxidn catalyst
sulfide oxidn immobilized manganese catalyst

Index Entries

Oxidation catalysts
manganese(II) iminodiacetate immobilized complexes, for cysteine or sulfide
Kinetics of oxidation
of cysteine or sulfide, by mol. oxygen, in presence of manganese(II) iminodiacetate immobilized complexes
142-73-4, manganese(II) complexes
7439-96-5, iminodiacetic acid complexes
catalysts, immobilized on silica for oxidn. of cysteine or sulfide
52-90-4, reactions
oxidn. of, by mol. oxygen in aq. solns. in presence of manganese(II) iminodiacetate immobilized complexes
18496-25-8
oxidn. of, by mol. oxygen, in aq. solns. in presence of manganese(II) iminodiacetate immobilized complexes

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103:67869

Polymer catalyst transducers and their use in test kits for analytical methods.
Hu, Kung Wei Jen; Vogelhut, Paul O. (Miles Laboratories, Inc., USA). Eur. Pat. Appl. EP 140322 A2 8 May 1985, 22 pp. DESIGNATED

STATES: R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE. (English).
 (European Patent Organization). CODEN: EPXXDW. CLASS: ICM:
 G01N027-02. ICS: G01N033-53. APPLICATION: EP 84-112709 22
 Oct 1984. PRIORITY: US 83-548152 2 Nov 1983. DOCUMENT
 TYPE: Patent CA Section: 9 (Biochemical Methods)
 Polymer-catalyst transducers and their use for detecting one or more
 constituents in a sample are disclosed. Changes in cond. of the
 polymer-catalyst transducers as a result of electron d. changes are
 measured to provide an indication of a particular constituent present in
 the sample. Such cond. changes can be measured using a cond.
 meter. The polymer-catalyst transducers are particularly useful for the
 detn. of glucose in whole blood. Thus, polypyrrole tetrachlororuthenate
 was prepd., deposited onto a gold electrode; peroxidase and glucose
 oxidase were immobilized in it and used for measuring glucose.

Keywords

polymer catalyst transducer biochem analysis
 glucose detn blood polymer transducer

Index Entries

Group VIII elements
 as catalyst, in polymer-catalyst transducers, for biochem. anal.
 Blood analysis
 glucose detn. in, polymer-catalyst transducers for
 Transducers
 polymer-catalyst, prepn. of, for biochem. anal.
 50-99-7, analysis
 detn. of, polymer-catalyst transducer for
 111-30-8
 immobilization with, of peroxidase and glucose oxidase on polymer
 catalyst transducers for glucose detn.
 9001-37-0
 9003-99-0
 immobilized, in glucose detn. with polymer catalyst transducers
 7722-84-1, biological studies
 in biochem. anal. with polymer-catalyst transducer
 97513-35-4
 97513-36-5
 97513-43-4
 97576-07-3
 97591-75-8
 prepn. of, for use in biochem. anal.
 56-34-8
 reaction of, with ferric chloride
 39050-26-5
 reaction of, with ferrous sulfate
 14240-75-6
 97466-84-7
 97549-12-7
 reaction of, with pyrrole
 7705-08-0, reactions
 10049-08-8
 reaction of, with tetraethylammonium chloride
 56902-08-0
 reaction of, with tetraethylammonium tetrachloroferrate (III)
 109-97-7
 reaction of, with tetraethylammoniumtetrachloroferrate (III)
 7720-78-7
 reaction of, with tetrasodium tetrasulfonatophenyl porphyrin

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102:185582

Asymmetric reactions catalyzed by polymeric cinchona alkaloids.
 Kobayashi, Norio (Sagami Chem. Res. Cent., Kanagawa 229, Japan).
 Br. Polym. J., 16(4), 205-11 (English) 1984. CODEN: BPOJAB. ISSN:
 0007-1641. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of
 Synthetic High Polymers) Section cross-reference(s): 31
 Asym. catalysis by acrylonitrile-cinchona alkaloid (quinine, quinidine,
 cinchonidine, and cinchonine) copolymers (A) in Michael-type reactions
 was studied. The copolymers having a free amino alc. part in the
 alkaloid moiety gave higher optical yields than did other existing
 polymer-supported alkaloid catalysts. The A were easily recovered
 from the reaction mix with retention of enantioselectivity. In some
 reactions, A exhibited a distinct polymer effect, from which a new
 concept of stereo control could be proposed: participation of
 C(3)-chirality in the enantioface-differentiating step (i.e., C(3) control).
 The catalytic behavior of acrylamide-alkaloid copolymers in asym.
 epoxidn. under phase-transfer conditions was also studied.

Keywords

acrylic cinchona alkaloid copolymer
 quinine acrylonitrile copolymer asym catalyst
 quinidine acrylonitrile copolymer asym catalyst
 cinchonine acrylonitrile copolymer asym catalyst
 cinchonidine acrylonitrile copolymer asym catalyst
 acrylonitrile cinchona alkaloid copolymer catalyst
 acrylamide cinchona alkaloid copolymer catalyst
 asym Michael reaction catalyst
 epoxidn asym catalyst
 induction asym Michael epoxidn catalyst
 stereocontrol Cinchona alkaloid polymer

Index Entries

Quaternary ammonium compounds, polymers
 alkylated cinchona alkaloids, immobilized on functionalized
 polystyrenes, catalysts, for asym. epoxidn.
 Asymmetric synthesis and induction
 in Michael reaction and epoxidn., cinchona alkaloid derivs. and
 polymers as catalysts in
 Michael reaction catalysts
 asym., cinchona alkaloid derivs. and polymers
 Epoxidation catalysts
 asym., phase-transfer, cinchona alkaloid polymers as
 Epoxidation
 asym., phase-transfer, of 2-chlorochalcone
 Alkaloids, polymers
 cinchonin, acrylic copolymers or immobilized on functionalized
 polystyrenes, catalysts, in asym. Michael reaction or
 epoxidn.
 78-94-4, uses and miscellaneous
 100-53-8
 102-96-5
 112-55-0
 495-41-0
 517-23-7
 611-10-9
 814-78-8
 1670-46-8
 5416-70-6
 22955-77-7
 26878-24-0
 Michael reactions of, asym. induction in, catalysts for
 130-95-0, reaction products with chloromethylated or
 w-bromododecylated crosslinked polystyrene
 catalysts, for asym. epoxidn. of 2-chlorochalcone

485-64-3
 485-65-4
 522-66-7
 1435-55-8
 9003-70-7, chloromethylated or w-bromododecylated, reaction
 products with quinine
 70977-21-8
 70977-22-9
 70977-23-0
 70977-24-1
 72608-16-3
 74062-24-1
 81526-11-6
 81526-12-7
 81526-13-8
 81526-15-0
 81526-16-1
 81526-17-2
 81526-18-3
 81526-19-4
 81526-20-7
 81526-25-2
 81571-40-6
 81600-26-2
 96250-28-1
 96250-29-2
 96283-59-9
 catalysts, for asym. induction in Michael reaction
 3300-67-2
 epoxidn. of, asym. induction in, catalysts for

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100:198308
 Gel-immobilized macromolecular nickel complexes in hydrogenation
 and isomerization of allylbenzene.
 Potapov, G. P. (State Univ., Syktyvkar, USSR). React. Kinet. Catal.
 Lett., 23(3-4), 281-4 (English) 1983. CODEN: RKCLAU. ISSN:
 0304-4122. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
 Reaction Kinetics, and Inorganic Reaction Mechanisms)
 Ni complexes immobilized in the bulk of a 3-dimensionally cross-linked
 copolymer of the acrylic series were prepd. Hydrogenation of
 allylbenzene under various swelling of a polymeric gel permits, to a
 certain degree, to control the catalytic process.

Keywords

nickel complex gel immobilized catalyst
 hydrogenation catalyst polymer immobilized
 isomerization catalyst polymer immobilized
 allylbenzene hydrogenation isomerization nickel catalyst

Index Entries

Hydrogenation catalysts
 Isomerization catalysts
 nickel complexes, polymer-immobilized, for allylbenzene
 3264-82-2
 catalysts, polymer-immobilized, for hydrogenation and
 isomerization of allylbenzene
 300-57-2
 hydrogenation and isomerization of, on polymer-immobilized
 nickel complex catalysts

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100:157051

Ethylene polymerization on gel-immobilized metal complex catalytic systems.

Kabanov, V. A.; Smetanyuk, V. I. (USSR). Gomo-i Sopolimerizatsiya a Olefinov na Kompleksnykh Katalizatorakh, M., 109-33 From: Ref. Zh., Khim. 1984, Abstr. No. 1S365 (Russian) 1983. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Title only translated.

Keywords

ethylene polymn immobilized catalyst
metal complex immobilized polymn catalyst

Index Entries

Polymerization
of ethylene, in presence of gel-immobilized titanium-magnesium systems
Polymerization catalysts
titanium-magnesium, gel-immobilized, for ethylene
7440-32-6, compds.
catalysts, contg. magnesium, gel-immobilized, for polymn. of ethylene
7439-95-4, compds.
catalysts, contg. titanium, gel-immobilized, for polymn. of ethylene
27029-51-2
31074-11-0
73681-97-7
73681-98-8
graft, titanium-magnesium catalysts immobilized on, for polymn. of ethylene
9002-88-4
prepn. of, on gel-immobilized metal complex catalysts

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100:149797

Magnetic properties of nickel crystals obtained by reduction of immobilized nickel compounds.

Slinkin, A. A.; Yuffa, A. Ya.; Stakheev, A. Yu.; Kucherov, A. V.; Fedorovskaya, E. A.; Rubinshtein, A. M. (Inst. Org. Khim. im. Zelinskogo, Moscow, USSR). Kinet. Katal., 25(1), 245-7 (Russian) 1984. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 77 (Magnetic Phenomena) Section cross-reference(s): 67

The Curie temp. of ferromagnetic crystals of Ni does not depend on their dispersivity, but is detd. by the presence of an unreduced phase of NiO. The redn. of complexes of Ni immobilized on SiO₂ proceeds essentially more easily than for the systems Ni(OH)₂-SiO₂ and NiO-SiO₂, but crystals of Ni are more poorly stabilized on a surface of SiO₂ not contg. Ni²⁺. Judging from the magnitude of the ferromagnetic resonance linewidth, crystals of Ni obtained by redn. of an immobilized complex are less defective than crystals of Ni in catalyst obtained by deposition.

Keywords

catalyst nickel silica magnetic
magnetization nickel silica catalyst
Curie nickel silica catalyst
ferromagnetic resonance nickel silica catalyst

Index Entries

Catalysts and Catalysis

nickel-silica, from redn. of immobilized nickel complex, magnetic properties of

Curie point, ferromagnetic

Magnetic induction and Magnetization

of nickel crystals from redn. of immobilized nickel complexes on silica

Electron spin resonance

ferromagnetic, of nickel crystals from redn. of immobilized nickel complexes on silica

7718-54-9, uses and miscellaneous

catalysts of nickel crystals on silica obtained by redn. of immobilized

1313-99-1, uses and miscellaneous

12054-48-7

catalysts, on silica, magnetic properties of

7440-02-0, properties

magnetic properties of crystals of, from redn. of nickel complexes immobilized on silica

7631-86-9, properties

magnetic properties of nickel crystals on, obtained by redn. of immobilized nickel complexes

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100:74653

Study of immobilized catalysts. VIII. Structure and electronic structure of molybdenum chlorides fixed on polymer supports.

Echmaev, S. B.; Ivleva, I. N.; Raevskii, A. V.; Pomogailo, A. D.;

Borod'ko, Yu. G. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet.

Katal., 24(6), 1428-33 (Russian) 1983. CODEN: KNKTA4. ISSN:

0453-8811. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,

Reaction Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 35

The IR spectra, magnetic properties, and electron microscopy results for MoCl₅ supported polymn. catalysts for phenylacetylene (on polyethylene modified by radiation-grafted polyacrylonitrile) show that this catalyst has complex character. Along with individual complexes, clusters with antiferromagnetic bulk interaction are formed. The electronic state of supported Mo depends both on the nature of the functional group and also on the conditions of fixing it on the support surface. Polymn. occurs on active sites including diamagnetic Mo(IV) ions with distorted octahedral structure.

Keywords

molybdenum chloride supported catalyst structure

electron configuration supported molybdenum catalyst

polymn phenylacetylene supported catalyst

polymer supported molybdenum catalyst

Index Entries

Polymerization catalysts

molybdenum pentachloride, immobilized on polymer support

25134-58-1

catalyst support, for molybdenum chloride

10241-05-1

catalyst, immobilized on polymer support, electronic structure of

536-74-3

polymn. of, on molybdenum chloride immobilized catalyst

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98:53123

Liquid-phase dehydrogenation of 2-propanol by use of the immobilized complex catalyst rhodium(II) acetate dimer/phosphine silica.

Shinoda, Sumio; Tokushige, Yuji; Kojima, Takashi; Saito, Yasukazu (Inst. Ind. Sci., Univ. Tokyo, Tokyo 106, Japan). J. Mol. Catal., 17(1), 81-4 (English) 1982. CODEN: JMCADS. ISSN: 0304-5102.

DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds)

Section cross-reference(s): 67

The title reaction shows a const. durable catalytic activity, although the homogeneous reaction shows a higher activity. The smaller the av. surface d. of the ligand, the greater the catalytic activity.

Keywords

dehydrogenation propanol rhodium phosphine silica

Index Entries

Kinetics of dehydrogenation

of propanol on rhodium immobilized on phosphine silica

Dehydrogenation catalysts

rhodium immobilized on phosphine silica, for propanol

Polymer-supported reagents

rhodium on phosphine silica, catalysts, for dehydrogenation of propanol

7631-86-9, phosphinated

catalyst support, for rhodium dehydrogenation catalyst

15956-28-2, immobilized on phosphine silica

catalysts, for liq. phase dehydrogenation of propanol

67-63-0, reactions

dehydrogenation of, over rhodium acetate catalysts immobilized on phosphine silica

62309-52-8

formation of, by liq. phase hydrogenation of propanol over rhodium catalyst immobilized on phosphine silica

18586-39-5

reaction of, with silica, catalyst support from

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98:41336

Rhodium complexes of the water-soluble phosphine

(2-diphenylphosphinoethyl)trimethylammonium nitrate: Their chemistry in polar solvents, and their use as catalysts in aqueous solution, in aqueous/organic two-phase systems and adsorbed on a cation exchange resin.

Smith, Richard T.; Ungar, R. Kurt; Baird, Michael C. (Dep. Chem., Queen's Univ., Kingston, ON K7L 3N6, Can.). Transition Met. Chem. (Weinheim, Ger.), 7(5), 288-9 (English) 1982. CODEN: TMCHDN.

ISSN: 0340-4285. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 78

The Rh(I) chem. of amphos (Ph₂PCH₂CH₂NMe₃⁺) is described. These complexes catalyze hydrogenation or hydroformylation in aq. solns. of water-sol. olefins and in 2-phase aq.-org. solvent mixts. contg. water-insol. olefins. An interesting and novel catalyst precursor was formed by binding Rh amphos complexes to macroreticular cation exchangers.

Keywords

cation exchanger immobilized rhodium catalyst

rhodium 1 aminophosphine complex catalyst

hydrogenation catalyst rhodium phosphine

hydroformylation catalyst rhodium phosphine
alkene hydrogenation catalyst rhodium phosphine

Index Entries

Alkenes, reactions
hydrogenation of, on rhodium(I) aminophosphine complexes
immobilized on cation exchange resin
Nuclear magnetic resonance
of phosphorus-31, in rhodium(I) aminophosphine complexes, in
methanol
Hydroformylation catalysts
Hydrogenation catalysts
rhodium(I) aminophosphine complexes, immobilized on cation
exchangers, for alkenes
Cation exchangers
catalysts, rhodium aminophosphine complexes immobilized on,
for hydroformylation of alkenes
83951-76-2
83951-77-3
83951-78-4
NMR of, in methanol solns.
83988-23-2
catalysts, formed by rhodium and, immobilized on cation
exchangers, for hydrogenation or hydroformylation of
alkenes
7440-16-6, uses and miscellaneous
catalysts, immobilized on cation exchangers as aminophosphine
complexes, for hydrogenation or hydroformylation
83951-74-0
hydrogenation and reaction with excess aminophosphine ligand of,
in methanol solns.

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97:223752

Accessibility of silica-bonded phosphine ligands to rhodium(I) as
probed by high-resolution phosphorus-31 NMR spectroscopy.
Shinoda, Sumio; Nakamura, Kenichi; Saito, Yasukazu (Inst. Ind. Sci.,
Univ. Tokyo, Tokyo 106, Japan). J. Mol. Catal., 17(1), 77-80 (English)
1982. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE:
Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms) Section cross-reference(s): 77, 78
Two different types of phosphine silicas (prepd. by reaction with
Ph₂P(CH₂)₈SiCl₃) were reacted with Rh(acac)(CO)₂ (acac =
acetylacetonate) in PhMe suspensions. The ³¹P NMR spectra
indicated displacement of both some acac and at least 1 CO ligand
during immobilization. The proportion of surface phosphines
coordinated to Rh(I) varies greatly; at low ligand (phosphine) surface
coverage, not all phosphine groups are accessible to Rh(I). Such a
feature will affect the structure and activity of the immobilized catalyst.

Keywords

phosphine bonded silica immobilized rhodium
acetylacetonate rhodium immobilized catalyst
carbonyl rhodium immobilized catalyst
phosphorus NMR rhodium immobilized catalyst
NMR phosphine rhodium immobilized catalyst

Index Entries

Silica gel, compounds
phosphine-bonded, rhodium complex immobilization on, NMR
study of

Catalysts and Catalysis

rhodium, immobilized on phosphine silicas, NMR study of
7440-16-6, uses and miscellaneous
catalysts, immobilized on phosphine silicas, NMR study of
14874-82-9
reaction of, with phosphine silicas, NMR study of
52217-68-2, reaction products with silica gel
rhodium complex immobilization on, NMR study of, catalytic
properties in relation to

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96:58508

Coordination and reduction of nitric oxide on a cobalt
tetraphenylporphyrin imidazole complex.

Tsuji, Kazuhiko; Imaizumi, Masahiko; Oyoshi, Akira; Mochida, Isao;
Fujitsu, Hiroshi; Takeshita, Kenjiro (Fac. Eng., Kumamoto Univ.,
Kumamoto 860, Japan). Inorg. Chem., 21(2), 721-5 (English) 1982.
CODEN: INOCAJ. ISSN: 0020-1669. DOCUMENT TYPE: Journal CA
Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
Mechanisms)

Coordination and redn. of NO on Co tetraphenylporphyrin anchored to
imidazole on SiO₂ were studied to obtain basic information for
development of a novel catalyst. The complex adsorbed NO, giving a
nNO band around 1650 cm⁻¹, which is red shifted from that of gaseous
NO. The shift indicates significant activation of NO promoted by the dp
orbitals of the Co ion, which is influenced through strong p donation
from the axially coordinating imidazole ligand. The complex
catalytically reduced NO with H more effectively than CoTPP on SiO₂.
A reaction mechanism based on the trans effect of imidazole for the
coordination and activation of NO is proposed.

Keywords

spectra chemisorbed nitric oxide cobalt
nitric oxide redn complex catalyst
cobalt porphyrin immobilized catalyst
imidazole silica immobilized cobalt porphyrin

Index Entries

Reduction catalysts

cobalt tetraphenylphosphine complexes, immobilized on silica gel,
for nitric oxide

Chemisorbed substances

nitric oxide, on cobalt tetraphenylphosphine complexes
immobilized on silica gel

Ultraviolet and visible spectra

of cobalt tetraphenylphosphine complexes immobilized on silica
gel, nitric oxide chemisorption in relation to

Infrared spectra

of nitric oxide, chemisorbed on cobalt tetraphenylphosphine
complexes immobilized on silica gel

Reduction

of nitric oxide, coordinated to cobalt tetraphenylphosphine
complexes immobilized on silica gel

14172-90-8

79898-39-8

catalyst, silica gel-supported, for redn. of nitric oxide
10102-43-9, reactions

chemisorption and redn. of, on cobalt tetraphenylphosphine
complex immobilized on silica gel

42034-08-2

79872-86-9

spectra of, on silica gel, catalytic properties in relation to

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96:35752

Effect of gelatinous supports on the behavior of metal-complex catalysts of polymerization.

Kolotsei, I. N.; Popov, V. G.; Davydova, S. L.; Kabanov, V. A. (Vses. Nauchno-Issled. Inst. Org. Sint., Moscow, USSR). Vysokomol. Soedin., Ser. B, 23(5), 368-71 (Russian) 1981. CODEN: VYSBAI. ISSN:

0507-5483. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 39

The kinetics of polymn. of ethylene (I) [74-85-1] in heptane in the presence of a gel-immobilized catalytic system composed of dicyclopentadienyltitanium dichloride (II) [1271-19-8] and Al(iso-Bu)₂Cl (III) [1779-25-5] on a vulcanized SKEPT rubber support at 30-90° and >135° is described. The polymn. rate and activation energy of polymn. of I at >135° are considerably lower in the presence of a gel-immobilized II-III catalytic system than in the presence of free II-III system, presumably due to diffusion-controlled bimol. deactivation of the catalyst and inhibition of chain propagation. Thus, at >135° the active centers of the catalyst diffuse into the solvent and deactivate. No decrease in polymn. rate of I is obsd. at >135° when the SKEPT rubber support is replaced by a partially crosslinked 1,2-polybutadiene rubber support, which has a higher affinity for the catalytic complex than SKEPT rubber.

Keywords

kinetics polymn ethylene gel support
cyclopentadienyltitanium catalyst polymn ethylene
aluminum catalyst ethylene polymn
rubber support ethylene polymn
butadiene rubber support ethylene polymn
mechanism polymn ethylene gel support

Index Entries

Polymerization
of ethylene, in presence of gel-immobilized catalyst system,
mech. of
Kinetics of polymerization
of ethylene, in presence of gel-immobilized catalyst system,
rubber support effect on
Rubber, synthetic
dicyclopentadiene-ethylene-propene, gel-immobilized supports,
for aluminum-titanium catalysts, for polymn. of ethylene
Rubber, butadiene, uses and miscellaneous
of 1,2-configuration, gel-immobilized supports, for
aluminum-titanium catalysts, for polymn. of ethylene
Polymerization catalysts
supported, gel-immobilized, dicyclopentadienyltitanium dichloride
and diisobutylaluminum chloride, for ethylene
1271-19-8
1779-25-5
catalysts, supported, for polymn. of ethylene
74-85-1, reactions
polymn. of, in presence of a gel-immobilized catalytic system,
kinetics and mechanism of
25034-71-3
rubber, gel-immobilized supports, for aluminum-titanium catalysts,
for polymn. of ethylene

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105:68948

Influence of the state of carbon sorbents on the activity of immobilized phenol oxidases.

Bogdanovskaya, V. A.; Gavrilova, E. F.; Tarasevich, M. R. (Inst. Elektrokhim. im. Frumkina, Moscow, USSR). Elektrokhiimiya, 22(6), 742-6 (Russian) 1986. CODEN: ELKKAX. ISSN: 0424-8570.

DOCUMENT TYPE: Journal CA Section: 72 (Electrochemistry) Section cross-reference(s): 7, 66, 67

The effect was examd. of the degree of oxidn. and the porous structure of C sorbents on the activity of the immobilized polyphenol oxidases: laccase and tyrosinase. The quantity of immobilized enzyme increases with an increase in the degree of oxidn. of the surface. The max. activity of the enzymes takes place in the range of intermediate fillings, both in the phenol oxidase phase reaction as well as in the electroredn. of O. The kinetics of the dependence for solubilized and immobilized enzymes are described by a Michaelis equation.

Keywords

carbon sorbent activity phenol oxidase
laccase tyrosinase redn catalyst oxygen
immobilized phenol oxidase activity
oxygen electroredn catalyst phenol oxidase

Index Entries

Reduction, electrochemical
of oxygen, on carbon electrodes with immobilized phenol
oxidases
Oxidation, electrochemical
of phenol oxidases on carbon sorbents
Adsorbed substances
phenol oxidases, on carbon electrodes
Carbon black, uses and miscellaneous
sorbents, activity of immobilized phenol oxidases in relation to
Reduction catalysts
electrochem., carbon with immobilized phenol oxidases, for
oxygen
9002-10-2
80498-15-3
activity of immobilized, effect of state of carbon sorbents in
relation to
7782-44-7, reactions
redn. of, electrochem., on carbon with immobilized phenol
oxidases
7440-44-0, uses and miscellaneous
7782-42-5, uses and miscellaneous
sorbents, activity of immobilized phenol oxidases in relation to

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104:128193

A theoretical model for catalyst-fluid flow reactors with immobilized cells.

Gamarra, J. A. (Inst. Invest. Ind. Quim., Univ. Nac. Salta, Salta 4400, Argent.). J. Chem. Technol. Biotechnol., Biotechnol., 35B(4), 239-52 (English) 1985. CODEN: JTBD7. DOCUMENT TYPE: Journal CA Section: 16 (Fermentation and Bioindustrial Chemistry)

A theor. model of the behavior of immobilized cells in porous pellets is developed. Particular attention is given to EtOH [64-17-5] prodn. with immobilized yeast cells, the deactivating effect of the alc. upon the cells, and the performance of the reactor. It is demonstrated that by introducing an activity parameter, which is a measurable quantity, all of the effects of immobilization, decreased activity, increased operational stability and increased thermal resistance, yield to a quant. description. This description is given in terms of parameters that govern the

diffusion and reaction phenomena in the pellet and the dynamics of the cell population in free form. The effects of EtOH are accounted for by treating it as a deactivator acting in series with the main reaction. In this way it can be shown that its action manifests itself by increasing a natural decay const. of the cell system. The growth of the cell population inside the pellet is taken into account. Immobilized enzyme reactors may be considered a special case of heterogeneous biocatalytic reactors in which no growth takes place. The model is able, therefore, to describe enzyme systems under analogous conditions of deactivation-reaction or under natural irreversible decay.

Keywords

ethanol prodn immobilized yeast reactor

Index Entries

Yeast

immobilized, ethanol prodn. by, in catalyst-fluid flow reactors

Process simulation, biological

of catalyst-fluid flow reactors with immobilized cells

Fermentation apparatus

immobilized cell, with immobilized cells, theor. model for

64-17-5, preparation

prepn. of, with immobilized cells in catalysts-fluid flow reactors

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103:59965

Ion-exchange immobilized fixed Group VIII metal complexes of as hydrosilylation catalysts.

Reikhefel'd, V. O.; Nikitin, A. V. (USSR). Deposited Doc., VINITI 4717-84, 26 pp. Avail. VINITI (Russian) 1984. DOCUMENT TYPE:

Report CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

The catalytic activity and regioselectivity of $MnLm'$ complexes ($M = Co, Ni, Ru, Rh, Pd, Os, Ir, Pt$; $L = \text{halide}, NO_2^-, SCN^-$; $L' = DMSO, Et_2SO, Et_2S, NH_3$) for styrene hydrosilylation by $MeSiHCl_2$ were studied after these complexes were immobilized on AV 17X8 or KU 2X8 anion exchangers.

Keywords

hydrosilylation catalyst immobilized metal complex

transition metal complex immobilized catalyst

Index Entries

Anion exchangers

catalysis by transition metal complexes immobilized on, in hydrosilylation

Transition metals, compounds

complexes, immobilized on anion exchangers, catalysts, for hydrosilylation

Hydrosilylation catalysts

transition metal complexes immobilized on anion exchangers

67-68-5, iridium and rhodium complexes

7439-88-5, ammonia and DMSO complexes

7440-16-6, ammonia and DMSO complexes

7664-41-7, iridium complexes

13965-91-8

14337-08-7

14349-66-7

14349-67-8

14493-01-7

14648-50-1
 15379-09-6
 16918-91-5
 16941-12-1
 17141-41-2
 18372-92-4
 21412-00-0
 22289-82-3
 23209-25-8
 38668-99-4
 97349-03-6
 97373-76-7
 97373-77-8
 catalysis by anion exchanger-immobilized, in hydrosilylation
 11118-20-0
 12642-25-0
 catalysis by transition metal complexes immobilized on, in
 hydrosilylation
 75-54-7
 hydrosilylation by, of styrene on transition metal complex-anion
 exchanger catalysts
 100-42-5, reactions
 hydrosilylation of, transition metal complexes immobilized on
 anion exchangers at catalysts for

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101:201246
 Polymer-catalyst-modified cadmium sulfide photochemical diodes in
 the photolysis of water.
 Honda, Kenji; Frank, Arthur J. (Solar Energy Res. Inst., Golden, CO
 80401, USA). J. Phys. Chem., 88(23), 5577-82 (English) 1984.
 CODEN: JPCHAX. ISSN: 0022-3654. DOCUMENT TYPE: Journal
 CA Section: 74 (Radiation Chemistry, Photochemistry, and
 Photographic and Other Reprographic Processes)
 Surface modification of single-crystal CdS photochem. diodes with
 elec. conductive polypyrrole in combination with catalytic dispersions of
 transition metals (Pt, Rh, RuO₂) immobilized in polystyrene films was
 effective in the stabilization of the semiconductor against degrdn.
 during the visible light-induced water-cleavage reaction. The wt. ratio
 of metal-to-polystyrene affected the cond. and electroactivity of the
 films. These factors and the hydrophobic nature of the polystyrene films
 were important in achieving high catalytic activity and stability of the
 CdS semiconductor. Sorption processes and the electronic contact
 between the polymer and the semiconductor influenced the net yields of
 H₂ and O₂ produced from water. Polystyrene-immobilized catalytic
 dispersions of Rh black were more effective for the prodn. of H₂ from
 water than films contg. Pt black or RuO₂ powder.

Keywords

water photolysis cadmium sulfide modification
 polymer catalyst cadmium sulfide photochem

Index Entries

Photolysis
 of water, cadmium sulfide photochem. diode for, surface
 modification of
 Diodes
 photochem., cadmium sulfide modified with elec. conductive
 polypyrrole in combination with catalytic dispersion of
 transitions metal immobilized in polystyrene film as, for
 water photolysis
 Photolysis catalysts

single-crystal cadmium sulfide with elec. conductive polypyrrole in combination with dispersion of transition metal immobilized in polystyrene film as, for water
7782-42-5, uses and miscellaneous
electrodes, coated with polystyrene films contg. transition metal, current-voltage characteristics of
30604-81-0
photochem. diode from cadmium sulfide single crystal contg. combination of catalytic dispersion of transition metals immobilized in polystyrene film and, for water photolysis
9003-53-6
photochem. diode from cadmium sulfide single crystal modified with polypyrrole in combination with catalytic dispersion of transition metals immobilized in film of, for water photolysis
7440-06-4, uses and miscellaneous
7440-18-8, uses and miscellaneous
12036-10-1
photochem. diode from cadmium sulfide single crystal surface modified with polypyrrole film in combination with dispersion of, immobilized in polystyrene film, for water photolysis
1306-23-6, reactions
photochem. diode from, with elec. conductive polypyrrole in combination with catalytic dispersions of transition metals immobilized in polystyrene films, for water photolysis
1333-74-0, uses and miscellaneous
7782-44-7, uses and miscellaneous
photogeneration of, from water, prepn. and characteristics of polymer-catalyst-modified cadmium sulfide photochem. diode for
7732-18-5, reactions
photolysis of, polymer-catalyst-modified cadmium sulfide photochem. diode for

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99:22970

Conversion of furan compounds in the presence of polymeric gel-immobilized catalysts.
Potapov, G. P.; Shirshova, T. I. (State Univ., Syktyvkar, USSR). React. Kinet. Catal. Lett., 21(3), 361-4 (English) 1982. CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)
Based on studies of catalytic oligomerization of furfuryl alc. [98-00-0], 2-furaldehyde [98-01-1], and tetrachlorofuran [2763-65-7] in the presence of gel-immobilized complexes of $Al(OPh)_3$, BF_3 and $Ti(Obu)_4$, an oligomerization mechanism was suggested and supported exptl.

Keywords

furan deriv oligomerization catalyst
aluminum organo oligomerization catalyst
boron fluoride complex oligomerization catalyst
titanium organo oligomerization catalyst
furfuryl alc oligomerization catalyst
furaldehyde oligomerization catalyst
chlorofuran oligomerization catalyst
mechanism oligomerization furan deriv

Index Entries

Rubber, synthetic
poly(acrylic acid)-grafted, complexes with metals and boron, as catalysts for oligomerization of furan derivs.

Polymerization

oligomerization, of furan derivs. in presence of poly(acrylic acid)-grafted synthetic rubber complexes with metals and boron, mechanism of

Polymerization catalysts

oligomerization, poly(acrylic acid)-grafted synthetic rubber complexes with metals and boron, for furan derivs.

5593-70-4, complexes with poly(acrylic acid)-grafted synthetic rubber

7637-07-2, complexes with poly(acrylic acid)-grafted synthetic rubber

9003-01-4, synthetic rubber-grafted, metal complexes

15086-27-8, complexes with poly(acrylic acid)-grafted synthetic rubber catalyst, for oligomerization of furan derivs.

25067-38-3

25212-86-6

86286-12-6

oligomeric, prepn. of, catalysts for

98-00-0

98-01-1, reactions

2763-65-7

oligomerization of, in presence of polymeric gel-immobilized metal complexes, mechanism of

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99:4050

Isomerization of glucose to fructose. 1. The stability of a whole cell immobilized glucose isomerase catalyst.

Straatsma, Johannes; Vellenga, Klaas; De Wilt, Henk G. J.; Joosten,

Geert E. H. (Chem. Eng. Dep., Groningen 9747 AG, Neth.). Ind. Eng.

Chem. Process Des. Dev., 22(3), 349-56 (English) 1983. CODEN:

IEPDAA. ISSN: 0019-7882. DOCUMENT TYPE: Journal CA Section:

16 (Fermentation and Bioindustrial Chemistry) Section

cross-reference(s): 7, 17

The rate of deactivation of immobilized whole cell *Arthrobacter* glucose isomerase [9055-00-9] catalyst was detd. quant. as a function of a no. of parameters. The deactivation is most sensitive to pH and temp., whereas other possible parameters, such as O₂ concn., byproduct concn., and impurities present in a synthetic feed stream appeared to have only a minor influence on the rate of deactivation under normal process conditions. The deactivation is probably caused by denaturation of the enzyme and not by mechanisms such as proteolysis, change of the membrane structure of *Arthrobacter* cells, or pore plugging.

Keywords

reactor immobilized *Arthrobacter* glucose isomerase
heat immobilized *Arthrobacter* glucose isomerase
immobilized *Arthrobacter* glucose isomerase stability

Index Entries

Arthrobacter

glucose isomerase of immobilized, stability of

Heat, biological effects

on glucose isomerase stability in immobilized *Arthrobacter*

Reactors

liq.-solid, stirred, glucose isomerase of *Arthrobacter* immobilized in stability of

Reactors

plug-flow, glucose isomerase of *Arthrobacter* immobilized in, stability of

9055-00-9

of immobilized *Arthrobacter*, stability of

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98:124151

Immobilized cells: catalyst preparation and reaction performance.
Klein, J.; Vorlop, K. D. (Inst. Chem. Technol., Tech. Univ. Braunschweig, Braunschweig, Fed. Rep. Ger.). ACS Symp. Ser., 207(Found. Biochem. Eng.), 377-92 (English) 1983. CODEN: ACSMC8. ISSN: 0097-6156. DOCUMENT TYPE: Journal CA Section: 16 (Fermentation and Bioindustrial Chemistry)

An overview of the immobilization of cells in polymeric carriers and their use for the enzymic conversion of org. compds. is presented. The quant. estn. of the effectiveness factor-Thiele modulus relation is also presented for different types of reaction types. The estn. includes the exptl. detn. of the catalytically active cell concn. and the effective diffusivity in the polymeric carrier.

Keywords

cell immobilization catalyst reaction

Index Entries

Escherichia coli
immobilized, in aminopenicillanic acid prepn. from penicillin G
Process simulation, biological
of immobilized cell catalyst effectiveness
Microorganism
immobilized, as catalyst, reaction performance of
61-33-6, biological studies
aminopenicillanic acid formation from, with immobilized
Escherichia coli
551-16-6
prepn. of, from penicillin G with immobilized Escherichia coli

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97:197594

Phase-transfer catalysts immobilized and adsorbed on alumina and silica gel.
Tundo, Pietro; Venturello, Paolo; Angeletti, Enrico (Ist. Chim. Org., Univ. Turin, Turin 10125, Italy). J. Am. Chem. Soc., 104(24), 6551-5 (English) 1982. CODEN: JACSAT. ISSN: 0002-7863. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 67

Onium salts immobilized on Al₂O₃ are effective phase-transfer catalysts in comparison to analogous sol. catalysts adsorbed on SiO₂ or Al₂O₃. Appreciable selectivity is obsd. in the nucleophilic substitution by aq. KI of halides of different sizes (1-bromobutane, -octane and -hexadecane). Al₂O₃- and silica gel-immobilized onium salts can also act very effectively as reagents when used in stoichiometric amts.

Keywords

phase transfer catalyst immobilized onium
bromoalkane substitution immobilized catalyst

Index Entries

Ammonium halides
Phosphonium compounds
immobilized on alumina, catalysts, for phase-transfer substitution of bromoalkanes
Kinetics of substitution reaction
of bromoalkanes with immobilized ammonium and phosphonium halides as phase-transfer catalysts

Substitution reaction catalysts
 phase-transfer, ammonium and phosphonium halides immobilized
 on alumina, for bromoalkanes
 6439-67-4
 14937-45-2
 catalysts from alumina or silica and, for phase-transfer substitution
 of bromoalkanes
 1344-28-1, reaction products contg. immobilized ammonium and
 phosphonium groups
 catalysts, for phase-transfer substitution of bromoalkanes
 2243-27-8
 19942-78-0
 prepn. of
 919-30-2
 52090-18-3
 reaction of, with alumina
 15949-84-5
 reaction of, with aminopropyl-functionalized alumina
 102-82-9
 998-40-3
 reaction of, with functionalized alumina
 109-65-9
 substitution reaction of, with cyanide and iodide, immobilized
 phase-transfer catalysts for
 111-83-1
 112-82-3
 substitution reaction of, with iodide, immobilized phase-transfer
 catalysts for

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97:6827
 Structural-morphological characteristics of gel-immobilized catalytic
 systems.
 Kabanov, V. A.; Litvinov, I. A.; Budantseva, T. V.; Smetanyuk, V. I. (Inst.
 Neftekhim. Sint. im. Topchieva, Moscow, USSR). Dokl. Akad. Nauk
 SSSR, 262(5), 1169-72 [Phys. Chem.] (Russian) 1982. CODEN:
 DANKAS. ISSN: 0002-3264. DOCUMENT TYPE: Journal CA
 Section: 35 (Chemistry of Synthetic High Polymers) Section
 cross-reference(s): 39, 67
 The gel-immobilized polymn. catalysts prepd. by treatment of
 4-vinylpyridine-grafted ethylene-propylene rubber (SKEPT) with Ni
 acetylacetonate (I) and studied by electron microscopy, had complex
 morphol. structure of ~1000-Å globules of the grafted rubber dispersed
 in SKEPT. The globules contained 100-Å particles of 4-vinylpyridine
 moieties with fixed active sites in a form of I complexes, while the
 interspaces between particles were filled by ethylene-propylene chains.

Keywords

gel immobilized polymn catalyst morphol
 ethylene propylene rubber vinylpyridine grafted
 nickel acetylacetonate gel immobilized catalyst
 complex nickel acetylacetonate vinylpyridine copolymer

Index Entries

Polymerization catalysts
 gel-immobilized, vinylpyridine-grafted ethylene-propylene rubber,
 nickel acetylacetonate-contg., morphol. of
 Polymer morphology
 of vinylpyridine-grafted ethylene-propylene rubber treated with
 nickel acetylacetonate, for gel-immobilized polymn.
 catalysts
 Rubber, synthetic

dicyclopentadiene-ethylene-propene, vinylpyridine-grafted, nickel acetylacetonate-contg., gel-immobilized polymn. catalysts, morphol. of
3264-82-2, vinylpyridine-grafted ethylene-propylene rubber complexes gel-immobilized polymn. catalysts, morphol. of
73681-97-7, nickel acetylacetonate complexes
graft, rubber, gel-immobilized polymn. catalysts, morphol. of

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96:118307

Hybrid organometallic/enzymic catalyst systems: regeneration of NADH using dihydrogen.

Abril, Obsidiana; Whitesides, George M. (Dep. Chem., Massachusetts Inst. Technol., Cambridge, MA 02139, USA). J. Am. Chem. Soc., 104(6), 1552-4 (English) 1982. CODEN: JACSAT. ISSN: 0002-7863.

DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods)

Section cross-reference(s): 21, 29

A mixt. of a water-sol. bis(phosphine)rhodium complex and D- and L-lactate dehydrogenase catalyzes the redn. of NAD to NADH by H₂ in an aq. soln. contg. pyruvate. Coupling of this system to the asym. redn. of 2-norbornanone using horse liver alc. dehydrogenase was demonstrated.

Keywords

org synthesis enzymic NADH regeneration
norbornanol prepn enzyme NADH regeneration
catalyst hybrid organometallic enzymic NAD redn
rhodium complex enzymic hybrid catalyst

Index Entries

497-38-1

asym. redn. of, by alc. dehydrogenase, NADH regeneration in

71120-42-8

79971-91-8

catalyst, NADH regeneration with, for enzyme-catalyzed redn. reactions

9001-60-9

9028-36-8

immobilized, NADH regeneration with, in presence of organometallic catalyst

9031-72-5

immobilized, norbornanone redn. by, NADH regeneration in

61277-90-5

61277-93-8

prepn. of

108-94-1, reactions

redn. of, by alc. dehydrogenase, NADH regeneration in

53-84-9

redn. of, by hybrid organometallic-enzymic catalyst

53-84-9

redn. of, with hybrid organometallic-enzymic catalyst

58-68-4

regeneration of, with hybrid organometallic-enzymic catalyst, for enzyme-catalyzed redn. reactions

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105:60978

Synthesis of isotactic polypropylene in the presence of homogeneous catalytic systems immobilized on graphite.

Nedorezova, P. M.; Tsvetkova, V. I.; D'yachkovskii, F. S. (Inst. Khim. Fiz., USSR). Vysokomol. Soedin., Ser. B, 28(3), 163-4 (Russian)

1986. CODEN: VYSBAI. ISSN: 0507-5483. DOCUMENT TYPE:
Journal CA Section: 35 (Chemistry of Synthetic High Polymers)
Immobilization of Ti-Al catalyst systems on graphite increased
stereospecificity in the polymn. of propylene. A graphite-immobilized
bis(acetylacetonato)dichlorotitanium [17099-86-4]-Et₂AlCl [96-10-6]
catalyst at 30° gave 4% atactic fraction, compared with 22% in the
absence of graphite. The stereoregulating effect obsd. in the presence
of graphite was attributed to the formation on the graphite surface of
polynuclear Ti compds. with high stereoregulating ability.

Keywords

graphite immobilized Ziegler catalyst stereospecificity
isotactic polypropylene prepn catalyst

Index Entries

Polymerization
Ziegler, of propylene, with high stereospecificity
Polymerization catalysts
Ziegler, stereospecific, graphite-immobilized, for propylene
7782-42-5, uses and miscellaneous
Ziegler catalysts immobilized on, for polymn. of propylene,
stereospecificity of
5593-70-4
17099-86-4
catalysts, contg. diethylaluminum chloride, graphite-immobilized,
for polymn. of propylene, stereospecificity of
96-10-6, uses and miscellaneous
catalysts, contg. titanium compd., graphite-immobilized, for
polymn. of propylene, stereospecificity of
25085-53-4
prepn. of, in presence of graphite-immobilized Ziegler catalysts

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103:129922
Heterogeneous chiral transition metal-phosphine complex catalysts.
Kinting, Annegret; Krause, Hans Walter; Capka, Martin (Akademie der
Wissenschaften der DDR, Ger. Dem. Rep.). Ger. (East) DD 219956
A1 20 Mar 1985, 13 pp. (German). (German Democratic Republic).
CODEN: GEXXA8. CLASS: ICM: B01J027-14. ICS: C07F009-50;
B01J023-46; B01J021-08. APPLICATION: DD 83-254410 1 Sep
1983. DOCUMENT TYPE: Patent CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms) Section
cross-reference(s): 23, 45
Transition metal phosphine complexes were immobilized on oxide
supports by reacting secondary chiral phosphines with trihalo- or
trialkoxysilanes, reacting the products with the support, and finally
introducing the transition metal. These heterogeneous chiral
complexes promote asym. hydrogenation.

Keywords

hydrogen catalyst asym immobilized
phosphine transition metal immobilized catalyst
chiral phosphine complex catalyst

Index Entries

Transition metals, compounds
complexes with chiral phosphines immobilized on oxide supports,
asym. hydrogenation catalysts
Silica gel, compounds
reaction products with chiral phosphine-silane compds., transition

metal complexes, asym. hydrogenation catalysts
 Hydrogenation catalysts
 transition metal-chiral phosphine complexes, immobilized on
 oxide supports, asym.
 98299-69-5, reaction products with silica gel, rhodium complexes
 98299-70-8
 98329-08-9
 catalysts, for asym. hydrogenation
 7803-51-2, chiral derivs., rhodium complexes
 catalysts, immobilized on oxide supports for asym. hydrogenation
 7440-16-6, complexes with chiral phosphines
 catalysts, immobilized on silica gel for asym. hydrogenation

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103:84292

Immunoassay using a metal-complex compound as a
 chemiluminescent catalyst. V. Continuous immunoassay by the
 use of CLCCIA.

Hara, Tadashi; Toriyama, Motohiro; Imaki, Masakatsu (Fac. Eng.,
 Doshisha Univ., Kyoto 602, Japan). Bull. Chem. Soc. Jpn., 58(4),
 1299-303 (English) 1985. CODEN: BCSJA8. ISSN: 0009-2673.

DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods)

Immunoassay, using as a labeling reagent a synthesized
 metal-complex compd. having catalytic activity for a
 chemiluminescence reaction, was continuously carried out by the
 sandwich method. The labeling reagent is
 [1,8,15,22-tetrakis-(chloroformyl)phthalocyaninato]iron(III) and the
 immunoassay is called chemiluminescence complex catalyst
 immunoassay (CLCCIA). The time necessary for all the processes
 (including: an immune reaction, bound/free fractions sepn., a sandwich
 reaction, and a chemiluminescence reaction) was reduced to 50 min.
 Human serum albumin in the range of 5 ng to 1 mg could be detd.
 (continuously) up to 5 times by the use of the same column
 (immobilized with an antibody).

Keywords

chemiluminescence complex catalyst immunoassay albumin
 serum albumin detn immunoassay
 chloroformylphthalocyaninato iron metal catalyst immunoassay

Index Entries

Blood analysis
 albumins detn. in, of humans by chemiluminescence complex
 catalyst immunoassay
 Albumins, blood serum
 detn. of, of humans by chemiluminescence complex catalyst
 immunoassay
 Immunoglobulins
 G, to blood serum albumin of humans, labeling of, with
 chloroformylphthalocyaninato iron(III)
 Glass, oxide
 beads, porous, IgG to human serum albumin immobilization on
 Immunochemical analysis
 chemiluminescence immunoassay, metal-complex compd. as
 chemiluminescent catalyst in
 97685-71-7
 IgG to human serum albumin labeling by
 521-31-3
 in chemiluminescence complex catalyst immunoassay
 111-30-8
 506-68-3
 15056-35-6

in prepn. of immobilized antibody for chemiluminescence complex
catalyst immunoassay

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102:12801

Study of immobilized catalysts. XIII. Fixed heterometallic complexes
with statistical distribution of transition metals.

Pomogailo, A. D.; Golubeva, N. D.; Ivleva, I. N.; Echmaev, S. B.;
D'yachkovskii, F. S. (Otd. Inst. Khim. Fiz., Chernogolovka, USSR).
Kinet. Katal., 25(5), 1145-51 (Russian) 1984. CODEN: KNKTA4.

ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 77

The characteristics of the valent or donor-acceptor fixation of
heterogeneous catalysts was studied on catalysts models: (1) VCl_4 +
 Ni(II) on polyethylene grafted by acrylic acid and (2) VCl_4 + Co(II) on
polyethylene grafted by vinylpyrrolidone. The consecutive layering
leads to formation of catalytic systems with cooperative interaction of
paramagnetic centers. The mechanism of these interactions and the
role of support are discussed.

Keywords

fixed catalyst transition metal polymeric support
EPR transition bimetal catalyst supported
magnetism transition bimetal catalyst supported
paramagnetic center interaction catalyst supported
vanadium polymer support fixed catalyst
nickel polymer support fixed catalyst

Index Entries

Transition metals, compounds

as catalysts, bimetallic fixed on polymeric support, paramagnetic
center interactions in

Catalysts and Catalysis

fixed, heterometallic, on polymeric support, characteristics of

Polymers, uses and miscellaneous

grafts, as catalyst support, for bimetallic transition-metal catalysts,

structure and interaction of paramagnetic centers in

Paramagnetic centers

in bimetallic transition-metal catalysts fixed on polymeric support,
interaction of

Naphthenic acids, compounds

nickel salts, catalysts prepd. from vanadium compd. and, fixed on
polymeric support, paramagnetic center interactions in

7727-18-6

7550-45-0, uses and miscellaneous

7632-51-1

catalysts prepd. from nickel acetate and, on polymeric support,

paramagnetic center interaction in

71-48-7

373-02-4

2223-95-2

3264-82-2

14024-48-7

7718-54-9, uses and miscellaneous

catalysts prepd. from vanadium compd. and, fixed on polymeric

support, paramagnetic center interactions in

9010-77-9

25067-33-8

grafts, as catalyst support, for bimetallic transition-metal catalysts,
structure and interaction of paramagnetic centers in

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100:86093

Peptide synthesis using enzyme as synthetic catalyst. Synthesis of new water-soluble ester substrates and enzyme immobilization. Muneyuki, Ryonosuke; Oka, Tatsushi; Morihara, Kazuyuki (Shionogi Res. Lab., Shionogi and Co., Ltd., Osaka 553, Japan). Nippon Kagaku Kaishi, (9), 1336-44 (Japanese) 1983. CODEN: NKAKB8. ISSN: 0369-4577. DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 7 Water-sol. poly(ethylene glycol) esters $\text{PhCH}_2\text{O}_2\text{C-Phe-(OCH}_2\text{CH}_2)_4\text{OH}$ and $\text{PhCH}_2\text{O}_2\text{C-Val-Tyr-(OCH}_2\text{CH}_2)_n\text{OH}$ ($n = 9.1, 22.7$) were treated with H-Leu-NH₂ in the presence of α -chymotrypsin to give the corresponding peptide amides, which ppt. as insol. products. Immobilized proteases were used in the conversion of porcine insulin into human insulin via semisynthetic methods; the key step was the coupling of porcine des-alaB30-insulin with H-Thr-OCMe₃. Achromobacter Protease I immobilized on poly(glutamic acid) exhibited high activity.

Keywords

enzyme catalyst peptide synthesis
protease immobilized catalyst peptide synthesis
insulin semisynthesis immobilized protease catalyst

Index Entries

Enzymes

catalysts, for peptide synthesis
Peptides, preparation
prepn. of, enzymes as catalysts for
22252-43-3
amidation by, of protected amino acid poly(ethylene glycol) esters,
chymotrypsin as catalysts for
9004-07-3
catalysts, for amidation of protected amino acid poly(ethylene
glycol) esters
12584-58-6
cleavage of, by immobilized protease
10466-61-2
coupling of, with protected amino acid poly(ethylene glycol) esters,
chymotrypsin as catalysts for
1149-26-4
1164-16-5
17609-52-8
79598-35-9
esterification of, with poly(ethylene glycol)
25322-68-3
esterification of, with protected amino acids and dipeptides
1161-13-3
esterification of, with tetraethylene glycol
9001-92-7
immobilized, in semisynthetic conversion of porcine insulin to
human insulin
66748-90-1
peptide coupling of, with des-alanine(B30)-insulin
88820-98-8
prepn. and chymotrypsin-catalyzed amidation of
88820-97-7
88830-31-3
prepn. and chymotrypsin-catalyzed coupling of, with leucinamide
74870-09-0
prepn. and de-tert-butylation of
39416-73-4

prepn. and peptide coupling of, with threonine tert-Bu ester
 78025-07-7
 88820-95-5
 88820-96-6
 prepn. of
 55150-31-7
 prepn. of, by chymotrypsin-catalyzed amidation of protected amino
 acid poly(ethylene glycol) esters
 13171-94-3
 prepn. of, by chymotrypsin-catalyzed coupling of protected amino
 acid poly(ethylene glycol) esters with leucinamide
 88830-32-4
 prepn. of, by chymotrypsin-catalyzed coupling of protected
 dipeptide poly(ethylene glycol) esters with leucinamide
 11061-68-0
 semisynthesis of, from porcine insulin, immobilized proteases for

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99:105869

Immobilized polymeric catalysts.

Challa, Ger; Verlaan, Jan P. J. (Lab. Polym. Chem., State Univ.
 Groningen, Groningen 9747 AG, Neth.). Proc. IUPAC, I. U. P. A. C.,
 Macromol. Symp., 28th, 265. Int. Union Pure Appl. Chem.: Oxford, UK.
 (English) 1982. CODEN: 50DXAF. DOCUMENT TYPE: Conference
 CA Section: 35 (Chemistry of Synthetic High Polymers) Section
 cross-reference(s): 21, 38, 67

The intrinsic activity of catalytic sites of Cu complexes of
 styrene-4-vinylpyridine copolymer used in oxidative coupling of
 2,6-di-tert-butylphenol [128-39-2] by O was not affected by
 immobilization of the catalyst on silica by grafting. Reuse of the
 immobilized catalyst by the decantation method was very successful.
 Even after 12 runs the reaction rate remained unchanged, indicating
 that leaching out of macromol. ligands or Cu ions did not take place.
 No effect of the length of immobilized chains on catalytic activity was
 obsd.

Keywords

immobilization polymeric catalyst
 copper complex vinyl polymer catalyst
 silica immobilized polymeric catalyst
 graft vinyl copolymer silica catalyst
 styrene copolymer silica graft catalyst
 vinylpyridine copolymer silica graft catalyst
 butylphenol oxidative coupling catalyst

Index Entries

Coupling reaction catalysts
 oxidative, copper complexes of silica-styrene-vinylpyridine graft
 copolymer, for dibutylphenol
 7440-50-8, complexes with silica-styrene-vinylpyridine graft copolymer
 catalysts, for oxidative coupling of dibutylphenol
 128-39-2
 coupling of, oxidative, catalysts for, copper complexes of
 silica-styrene-vinylpyridine graft copolymer as
 87006-57-3, complexes with copper
 graft, catalysts, for oxididative coupling of dibutylphenol

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99:105784

Polymerization processes in the presence of polymer catalysts.
 Dyachkovskii, F. S.; Pomogailo, A. D. (Inst. Chem. Phys.,

Chernogolovka 142 432, USSR). Proc. IUPAC, I. U. P. A. C.,
Macromol. Symp., 28th, 276. Int. Union Pure Appl. Chem.: Oxford, UK.
(English) 1982. CODEN: 50DXAF. DOCUMENT TYPE: Conference
CA Section: 35 (Chemistry of Synthetic High Polymers)
In polymn. of olefins, diolefins, and C₂H₂ [74-86-2] in the presence of
transition metal complexes immobilized on polymer supports, catalyst
activity depended on the metal, surface d. of immobilized complex, and
temp. The rate was 1st-order in monomer concn. over a broad concn.
range. Heterogeneous catalysts were stable at relatively high temps.
and had activities 100-200 times those of homogeneous catalysts.

Keywords

kinetics polymn catalyst immobilized
transition metal catalyst polymn
olefin polymn catalyst immobilized
diolefin polymn catalyst immobilized
acetylene polymn catalyst immobilized

Index Entries

Transition metals, uses and miscellaneous
catalysts, polymer-supported, for polymn. of acetylene and olefins
Kinetics of polymerization
in presence of polymer-supported transition metal catalysts
Alkadienes
Alkenes, reactions
polymn. of, polymer-supported transition metal catalysts for
Polymerization catalysts
transition metal complexes, polymer-supported, for acetylene and
olefins
Polymers, uses and miscellaneous
transition metal polymn. catalysts supported on
74-86-2, reactions
polymn. of, polymer-supported transition metal catalysts for

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97:12483

On the conditions of existence of a silica-anchored
carbonylphosphinecobalt complex as a heterogenized catalyst for
propylene hydroformylation.
Semikolenov, V. A.; Moroz, B. L.; Likholobov, V. A.; Yermakov, Yu. I.
(Inst. Catal., Novosibirsk, USSR). React. Kinet. Catal. Lett., 18(3-4),
341-5 (English) 1981. CODEN: RKCLAU. ISSN: 0304-4122.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms) Section
cross-reference(s): 22
Studies of the catalytic properties of silica-anchored Co
carbonyl-phosphine complexes in propylene hydroformylation in relation
to the CO partial pressure indicate that at low pressure (~0.1 MPa), Co
complexes are not removed from the support and hydroformylation
takes place on anchored complexes.

Keywords

cobalt phosphine carbonyl immobilized catalyst
hydroformylation catalyst propene cobalt complex

Index Entries

Hydroformylation catalysts
cobalt carbonyl-phosphine silica-immobilized complexes, for
propene
7440-48-4, uses and miscellaneous

catalysts, silica-immobilized, for hydroformylation of propene
115-07-1, reactions
hydroformylation of, on cobalt silica-immobilized catalyst
82082-00-6
reaction of, with cobalt and silica in catalyst prepn.

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105:28679

Ceramic articles having a nonporous core and porous outer layer.
Owens, Kenneth E.; Hatch, Robert A. (Minnesota Mining and Mfg. Co. ,
USA). Eur. Pat. Appl. EP 171289 A2 12 Feb 1986, 69 pp.

DESIGNATED STATES: R: DE, FR, GB, IT. (English). (European
Patent Organization). CODEN: EPXXDW. CLASS: ICM:

C04B035-00. ICS: C04B038-00. APPLICATION: EP 85-305644 8

Aug 1985. PRIORITY: US 84-638859 8 Aug 1984. DOCUMENT

TYPE: Patent CA Section: 57 (Ceramics) Section cross-reference(s):
7, 38, 67

Ceramic articles, e.g. fibers, with a non-porous core and a porous
sheath are manufd. by leaching a SiO₂ ceramic contg., e.g., Al₂O₃ or
B₂O₃, with aq. HF to give a porous sheath 0.1-9 times the av. thickness
of the core. Thus, 5 g of 3Al₂O₃:B₂O₃:2SiO₂ fibers previously fired at
900° were fired in air at 600° to remove any protective coating, then
leached in 9.6% aq. HF at room temp. for 20 min, rinsed with water,
and dried. Uniform porous sheaths 1.5 m thick were formed on the
fibers, which were impregnated with Pt metal using aq. H₂PtCl₆ to form
a supported oxidn. catalyst for CO and hydrocarbons. The use of the
materials as supports for metallic catalysis, enzymes, and magnetic
materials, and for reinforcing elastomers is demonstrated, and
ceramics contg. Al₂O₃ and ZrO₂ are also claimed.

Keywords

fiber ceramic porous surface
catalyst support porous ceramic fiber
polymer reinforcing ceramic fiber

Index Entries

Hydrocarbons, reactions
oxidn. of, catalysts for, supported on ceramic fibers with porous
surface layer
Ceramic materials and wares
porous surface layer on, formation of, by hydrofluoric acid leaching
Dehydrogenation catalysts
Hydrogenation catalysts
supported on porous ceramic fibers
Synthetic fibers
aluminoborosilicate, with porous surface layer, manuf. of, by
hydrofluoric acid leaching
Synthetic fibers
aluminum oxide-chromic oxide-silica, with porous surface layer,
manuf. of, by hydrofluoric acid leaching
Synthetic fibers
aluminum silicate, with porous surface layer, manuf. of, by
hydrofluoric acid leaching
Rubber, synthetic
hexafluoropropene-vinylidene fluoride, reinforcement of porous
ceramic fibers with
Catalysts and Catalysis
supports, ceramic fibers with porous surface layer
111-30-8, reaction product with 3-aminopropyltriethoxysilane
919-30-2, reaction product with glutaraldehyde
bonding agent, in immobilization of catalase on ceramic fibers
7440-06-4, uses and miscellaneous

catalysts, on ceramic fibers with porous surface layer
 1314-13-2, uses and miscellaneous
 7779-88-6
 ceramic fibers impregnated with, for altered n
 7722-84-1, reactions
 decompn. of, by enzyme immobilized on leached ceramic fibers
 102938-65-8
 dehydrogenation of, to 11H-benzo[a]carbazole, platinum catalyst
 for, supported on leached ceramic fabric
 7440-02-0, uses and miscellaneous
 electroless coating with, of ceramic fibers with porous surface layer
 25378-22-7
 hydrogenation of, catalysts for, supported on porous ceramic fibers
 9001-05-2
 immobilization of, on porous ceramic fibers, for hydrogen peroxide
 decompn.
 373-02-4
 10421-48-4
 in ceramic fiber impregnation with magnetic materials
 1303-86-2, uses and miscellaneous
 1308-38-9, uses and miscellaneous
 1314-23-4, uses and miscellaneous
 13463-67-7, uses and miscellaneous
 in ceramic fibers with porous surface layer
 7646-78-8, uses and miscellaneous
 7647-01-0, uses and miscellaneous
 7647-10-1
 7647-14-5, uses and miscellaneous
 7772-99-8, uses and miscellaneous
 in electroless nickel plating of leached ceramic fibers
 16941-12-1
 in manuf. of platinum catalyst supported on ceramic fibers with
 porous surface layer
 7664-39-3, uses and miscellaneous
 leachant, for porous layer formation on ceramics
 239-01-0
 manuf. of, from dihydrobenzo[a]carbazole, platinum catalyst for,
 supported on leached ceramic fabric
 112-40-3
 manuf. of, from dodecane, catalysts for, supported on porous
 ceramic fibers
 106-49-0, preparation
 manuf. of, from nitrotoluene, platinum catalyst for, supported on
 leached ceramic fabric
 115-07-1, reactions
 630-08-0, reactions
 oxidn. of, platinum catalyst for, supported on ceramic fibers with
 porous surface layer
 110-02-1
 poisoning by, resistance to, by catalysts supported on porous
 ceramic fibers
 99-99-0
 redn. of, to toluidine, platinum catalyst for, supported on leached
 ceramic fabric
 9011-17-0
 reinforcement of porous ceramic fibers with
 7439-92-1, uses and miscellaneous
 7440-66-6, uses and miscellaneous
 reinforcement of, with nickel-plated ceramic fibers

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104:129289

Preparation of catalysts and intermediates for stabilizers.

Rakovski, S.; Ivanova, V.; Georgieva, V. (Inst. Kin. Catal., Sofia 1040,

Bulg.). Izv. Khim., 18(2), 220-2 (Bulgarian) 1985. CODEN: IZKHDX.
ISSN: 0324-0401. DOCUMENT TYPE: Journal CA Section: 22
(Physical Organic Chemistry)

Several new immobile catalysts of Pt(II) and Pd(II) with polydentate ligands were prepd. for the hydrogenation of nitro arom. compds. at atm. pressure and 20-80°. The catalysts are highly active for the hydrogenation of PhNO₂ and p-O₂NC₆H₄NH₂. PhNHOH, PhNH₂, and p-(H₂N)₂C₆H₄ are obtained at high rates and selectivities.

Keywords

platinum immobilized hydrogenation catalyst
palladium immobilized hydrogenation catalyst
nitro arom hydrogenation kinetics

Index Entries

Hydrogenation catalysts
immobilized palladium or platinum complexes, for nitroarom. compds.
Kinetics of hydrogenation
of nitroarom. compds. or immobilized palladium or platinum complexes
Nitro compounds
aryl, hydrogenation of, kinetics of catalytic
Aromatic compounds
nitro, hydrogenation of, kinetics of catalytic
3375-31-3
10025-98-6
10025-99-7
catalyst from, for hydrogenation of arom. nitro compds.
62-53-3, preparation
100-65-2
formation of, from nitrobenzene
98-95-3, reactions
100-01-6, reactions
hydrogenation of, catalyst for
106-50-3, preparation
prepn. of

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104:107816

Production of 6-APA with immobilized cells: a catalyst development.
Klein, Joachim; Wagner, Fritz; Kressdorf, Burkhard; Mueller, Reinhard; Tjokrosoeharto, Handoko; Vorlop, Klaus Dieter (Inst. Tech. Chem., Tech. Univ. Braunschweig, Braunschweig D-3300, Fed. Rep. Ger.).
Biotechnol. Ser., 5(Enzymes Immobilized Cells Biotechnol.), 71-92
(English) 1985. CODEN: BTGYDD. ISSN: 0740-7378. DOCUMENT
TYPE: Journal CA Section: 16 (Fermentation and Bioindustrial Chemistry)
6-Aminopenicillanic acid (6-APA) [551-16-6] was produced by cleavage of penicillin G [61-33-6] using a recombinant strain of Escherichia coli contg. high penicillin acylase [9014-06-6] activity. Application of recombinant DNA techniques and optimization of growth conditions increased the specific activity of penicillin acylase from 12 units to 420 units/g wet cells. Various carriers were used for immobilization, e.g., alginate, carrageenan, epoxide, polyurethane, and chitosan [9012-76-4]. The latter was the best biocatalyst, as it converted 10% penicillin G solns. to ~99% at 37° and pH 8.1 after a reaction time of ~2 h. The yield of 6-APA was ~98%.

Keywords

aminopenicillanate prodn penicillin immobilized Escherichia

chitosan immobilized Escherichia penicillin acylase

Index Entries

Fermentation

aminopenicillanic acid, from penicillin G with immobilized
Escherichia coli
Escherichia coli
immobilized, aminopenicillanic acid manuf. with, from penicillin G
61-33-6, biological studies
aminopenicillanic acid manuf. from, with Escherichia coli
551-16-6
manuf. of, from penicillin G with immobilized Escherichia coli
9014-06-6
of immobilized Escherichia coli, aminopenicillanic acid formation
with penicillin G with
9012-76-4
Escherichia coli immobilization on, for penicillin G conversion to
aminopenicillanic acid

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104:75838

Immobilized catalysts. XVI. Structural characteristics and catalytic
properties of the fixed mono- and binuclear cobalt complexes.
Pomogailo, A. D.; Uflyand, I. E.; Golubeva, N. D. (Rostov-na-Donu Gos.
Univ., Rostov-on-Don, USSR). Kinet. Katal., 26(6), 1404-10 (Russian)
1985. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE:
Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms) Section cross-reference(s): 35
Polyethylene and polyacrylonitrile-, polyacrylamide-, or
polymethylvinylketone-grafted polyethylenes were used as supports
with diacylamino or aminovinylketone chelating groups. Spectral and
magnetic studies indicated the presence of tetrahedral Co(II). High and
stable activity for catalysis of stereospecific 1,4-cis-polymn. of
butadiene was found. An increase in the no. of Co(II) ions in the
complex decreases the specific activity of the catalyst.

Keywords

cobalt polymer supported catalyst

Index Entries

Catalysts and Catalysis

Polymerization catalysts
cobalt complexes, structure and properties of immobilized
Polyamides, uses and miscellaneous
polyethylene-, graft, catalyst support for cobalt complexes
7440-48-4, complexes
catalytic properties of immobilized
25134-58-1
25155-85-5
28550-69-8
graft, catalyst support for cobalt complexes
106-99-0, reactions
polymn. of, cobalt complex immobilized catalyst for

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104:68501

Immobilized crown ethers as catalysts of interphase reactions of
nucleophilic substitution.
Bogatskii, A. V.; Lukyanenko, N. G.; Pastushok, V. N.; Parfenova, M. N.
(Fiz.-Khim. Inst., Odessa, USSR). Dokl. Akad. Nauk SSSR, 283(3),

628-9 [Chem.] (Russian) 1985. CODEN: DANKAS. ISSN: 0002-3264. DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
The reaction of PhCH₂Br with KOAc was catalyzed by 4',5''-diaminodibenzo-18-crown-6 attached to modified Silochrome C-120 or incorporated in Teflon contg. a fluorinated side chain and by polymers of dibenzo-18-crown-6 or its di-tert-Bu deriv. with HCHO. The last 2 catalysts were the most active.

Keywords

substitution bromotoluene immobilized crown ether

Index Entries

Polymers, uses and miscellaneous
crown ether-contg., catalysts, for phase-transfer substitution
reaction of benzyl bromide with potassium acetate
Crown compounds
ethers, immobilized catalysts contg., for phase-transfer
substitution reaction of benzyl bromide with potassium
acetate
Substitution reaction catalysts
phase-transfer, immobilized crown ethers, for benzyl bromide with
potassium acetate
31352-45-1, derivs., immobilized on silochrome C-120
53660-42-7
100098-16-6, polymer bound with teflon
100228-22-6
catalysts, for phase-transfer substitution reaction of benzyl bromide
with potassium acetate
127-08-2
phase-transfer substitution reaction of, with benzyl bromide,
immobilized crown ether catalyst for
100-39-0
phase-transfer substitution reaction of, with potassium acetate,
immobilized crown ether catalysts for
50-00-0, reactions
polymn. of, with dibenzo-18-crown-6 and its di-tert-Bu derivs.
14187-32-7
polymn. of, with formaldehyde
100098-17-7, polymer bound with teflon
reaction of, with diaminodibenzo-18-crown-6

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104:40546
Photocatalytic decomposition of hydrogen sulfide on cadmium sulfide
immobilized on ion-exchange resin AN-221.
Makhmadurov, A.; Solozhenkin, P. M.; Parmon, V. N.; Savinov, E.
N. (Inst. Khim. im. Nikitina, Dushanbe, USSR). Dokl. Akad. Nauk
Tadzh. SSR, 28(6), 352-4 (Russian) 1985. CODEN: DANTAL. ISSN:
0002-3469. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
Reaction Kinetics, and Inorganic Reaction Mechanisms) Section
cross-reference(s): 52, 74
The title catalyst is active in the visible region. The quantum yield of H₂
is <1%.

Keywords

cadmium sulfide immobilized photocatalyst
hydrogen sulfide decompn catalyst

Index Entries

Photolysis catalysts
 cadmium sulfide, immobilized on ion exchanger AN 221, for
 hydrogen sulfide
 9084-87-1
 catalysts from cadmium sulfide and, for decompn. of hydrogen
 sulfide
 1306-23-6, uses and miscellaneous
 catalysts, immobilized on ion-exchange resin, for photodecompn.
 of hydrogen sulfide
 7783-06-4, reactions
 photochem. decompn. of, on cadmium sulfide catalyst
 immobilized on ion-exchange resin
 1333-74-0, preparation
 prepn. of, by hydrogen sulfide photocatalytic decompn. on
 immobilized cadmium sulfide

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104:24791
 Catalysis with metal cation-exchange resins.
 Waller, F. J. (Cent. Res. Dev. Dep., E. I. du Pont de Nemours and Co.,
 Wilmington, DE 19898, USA). Catal. Rev. - Sci. Eng., 28(1), 1-12
 (English) 1986. CODEN: CRSEC9. ISSN: 0360-2451. DOCUMENT
 TYPE: Journal; General Review CA Section: 67 (Catalysis, Reaction
 Kinetics, and Inorganic Reaction Mechanisms) Section
 cross-reference(s): 22
 A review with 23 refs. on perfluoro, polystyrenesulfonic acid, and
 perfluoro-polystyrenesulfonic acid cation exchangers as supports for
 metal ion catalysts.

Keywords

review immobilized metal ion catalyst
 cation exchanger immobilized catalyst review
 polystyrene sulfonic acid catalyst review

Index Entries

Cation exchangers
 catalysis by metal ions immobilized on
 Catalysts and Catalysis
 immobilized cations, on exchanger resins
 Perfluoro compounds
 polymers, sulfonated, catalysis by metal ions immobilized on

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103:184289
 Synthesis and properties of cationic cyclopentadienyl iron(II) moiety
 supported on polystyrene beads.
 Roman, Enrique A.; Valenzuela, Gerardo J.; Latorrre, Ramon O.;
 Sheats, John E. (Fac. Quim., Pontif. Univ. Catolica Chile, Santiago,
 Chile). Met.-Containing Polym. Syst., 149-64. Edited by: Sheats, John
 E.; Carraher, Charles E., Jr.; Pittman, Charles U., Jr. Plenum: New
 York, N. Y. (English) 1985. CODEN: 54DFAL. DOCUMENT TYPE:
 Conference CA Section: 67 (Catalysis, Reaction Kinetics, and
 Inorganic Reaction Mechanisms) Section cross-reference(s): 78
 The synthesis and physicochem. characterization is described for
 polymer-immobilized cationic cyclopentadienyliron(II) (in polystyrene
 beads). The polymer beads contain addn. organometallic functions
 such as CpFe(CO)2-, -(Ph)2PRhCl(COD), -Mo(CO)5, or
 -(Ph)2PRhCl(CO) (Cp = cyclopentadienyl; COD = cyclooctadiene).
 Olefin hydrogenation and photoactive behavior were obsd. for polymers
 supporting the CpFe(CO)2PPh2 group.

Keywords

iron 2 cyclopentadiene polymer complex
polymer immobilized hydrogenation catalyst

Index Entries

Alkenes, reactions
hydrogenation of, on polymer-immobilized iron(II)
cyclopentadienyl complex
Hydrogenation catalysts
iron(II) cyclopentadienyl complexes immobilized on polymers
Catalysts and Catalysis
supports, iron(II) cyclopentadienyl complex immobilized on
polymers
542-92-7, iron(II) complexes, polymer-immobilized
7439-89-6, cyclopentadienyl complex, polymer-immobilized
9003-53-6, reaction products with iron(II) cyclopentadienyl complex
12092-47-6, reaction products with polymer-immobilized iron(II)
cyclopentadienyl complex
13939-06-5, reaction products with polymer-immobilized iron(II)
cyclopentadienyl complex
98989-27-6, reaction products with polymer-immobilized iron(II)
cyclopentadienyl complex
catalysts

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103:178406

Polymeric catalysts. IX. Cobalt complexes of polyureas based on
bipyridine, pyridine and crown ether for aldol condensation.
Zhang, Keda; Kumar, G. Sudesh; Neckers, D. C. (Dep. Chem., Bowling
Green State Univ., Bowling Green, OH 43402, USA). J. Polym. Sci.,
Polym. Chem. Ed., 23(5), 1293-305 (English) 1985. CODEN:
JPLCAT. ISSN: 0449-296X. DOCUMENT TYPE: Journal CA Section:
29 (Organometallic and Organometalloidal Compounds) Section
cross-reference(s): 21, 25, 35, 67, 78
Co(OAc)₂ and related transition metal compds. served as catalysts for
aldol condensations when complexed with bipyridine, PPh₃, and crown
ethers. Complexes of polyureas contg. built-in Co, based on bipyridine
and crown ethers, as well Co complexes anchored to polystyrene by
PPh₃ and poly(4-vinyl pyridine), were also studied as catalysts.
Crossed condensation (i.e., Claisen-Schmidt) of PhCHO with
PhCHOMe, to yield chalcone, was used as the std. reaction in
assessing catalyst reactivity.

Keywords

Claisen Schmidt aldol cobalt catalyst
chalcone aldol cobalt catalyst
polyurea cobalt crown aldol condensation

Index Entries

Polymer-supported reagents
catalysts contg. cobalt, for aldol condensation
Polyureas
Urethane polymers, uses and miscellaneous
metal complexes immobilized on, as Claisen-Schmidt aldol
condensation catalysts
Condensation reaction catalysts
Claisen-Schmidt, transition metal complexes, immobilized on
polymeric supports
373-02-4
557-34-6

638-38-0
 7646-79-9, uses and miscellaneous
 7646-85-7, uses and miscellaneous
 7718-54-9, uses and miscellaneous
 7773-01-5
 7779-88-6
 10141-05-6
 10377-66-9
 13138-45-9
 catalyst contg. 18-crown-6 or phosphine and, for aldol
 condensation
 597-50-2
 603-35-0, uses and miscellaneous
 791-28-6
 1195-59-1
 4318-76-7
 14187-32-7
 16069-36-6
 17455-13-9
 18511-69-8
 33100-27-5
 60016-77-5
 84753-20-8
 98084-28-7
 110-86-1, uses and miscellaneous
 141-86-6
 366-18-7
 catalyst contg. cobalt acetate and, for Claisen-Schmidt aldol
 condensation
 71-48-7, Polymer supported
 25232-41-1, crosslinked, cobalt complexes
 98038-11-0, cobalt complexes
 98038-12-1, cobalt complexes
 98038-13-2, cobalt complexes
 98038-14-3
 98038-15-4
 98038-16-5
 catalyst, for Claisen-Schmidt aldol condensation
 71-48-7
 catalysts contg. ligands, polymers, and, for aldol condensation
 94-41-7
 53663-81-3, complexes with cobalt acetate
 65522-03-4, complexes with cobalt acetate
 90285-28-2, complexes with cobalt acetate
 98038-17-6
 98038-18-7
 98038-19-8
 98038-20-1
 98084-27-6, complexes with cobalt acetate
 98084-29-8, complexes with cobalt acetate
 98096-84-5
 98301-85-0
 prepn. and catalyst activity of, for Claisen-Schmidt aldol
 condensation
 94-41-7
 prepn. of, by Claisen-Schmidt aldol condensation, catalysts for

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103:104625
 Polymer-immobilized lipoamides-iron(II) system as a reducing
 catalyst for the reduction of nitrobenzenes to anilines by sodium
 borohydride.
 Kijima, Masashi; Nambu, Yoko; Endo, Takeshi (Res. Lab. Resour. Util.,
 Tokyo Inst. Technol., Yokohama 227, Japan). J. Polym. Sci., Polym.

Chem. Ed., 23(6), 1723-9 (English) 1985. CODEN: JPLCAT. ISSN: 0449-296X. DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Based on a redox function of 1,2-dithiolane = 1,3-dithiol, lipoamide (LAM), and polymers having the lipoamide structure functioned as reducing catalysts for the redn. of p-substituted nitrobenzenes to the corresponding anilines with NaBH₄ in EtOH contg. FeCl₂. Poly(allylamine) having a lipoamide structure (PAA-LAM) showed good reactivity for the redn. and was sepd. easily from the reaction mixt.

Keywords

polymer bound lipoamide redn catalyst
iron lipoamide redn catalyst
nitrobenzene redn hydride catalyst
aniline

Index Entries

Reduction
of nitrobenzenes to anilines by borohydride, catalytic
Reduction catalysts
polymer-bound lipoamide-iron(II), for nitrobenzenes with borohydride
Nitro compounds
redn. of, by sodium borohydride, polymer-bound lipoamide-iron catalysts for
Amines, preparation
aryl, prepn. by redn. of nitrobenzenes by borohydride, polymer-bound lipoamide-iron catalysts for
7758-94-3
catalysts with free or polymer-bound lipoamide, for borohydride redn. of nitrobenzenes
940-69-2
catalysts with iron (II), for sodium borohydride redn. of nitrobenzenes
940-69-2, polymer-bound
catalysts with iron(II), for borohydride redn. of nitrobenzenes
10045-89-3
catalysts with lipoamide, for borohydride redn. of nitroanisole
104-94-9
106-47-8, preparation
106-49-0, preparation
106-50-3, preparation
873-74-5
14572-89-5
prepn. of, by hydride redn. of nitrobenzene deriv. in presence of polymer-immobilized lipoamide-iron catalysts
71550-12-4
reaction of, with lipoic anhydride
91319-83-4
reaction of, with polyallylamine hydrochloride, polymer-bound lipoamide from
16940-66-2
redn. by, of nitrobenzenes, polymer-immobilized lipoamide-iron catalysts for
99-99-0
100-00-5
100-01-6, reactions
100-17-4
100-19-6
619-72-7
sodium borohydride redn. of, polymer-immobilized lipoamide-iron catalysts for

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103:12016

A new method for enhancing site isolation on silica gel and for improving the lifetime of site-isolated catalysts.

Drago, Russell S.; Pribich, David C. (Dep. Chem., Univ. Florida, Gainesville, FL 32611, USA). Inorg. Chem., 24(13), 1983-5 (English) 1985. CODEN: INOCAJ. ISSN: 0020-1669. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 66

Confunctionalization of silica gel with trialkylchlorosilanes and (CH₃O)₃SiCH₂CH₂CH₂SRh(CO)₂ produces a catalyst for the oxidn. of 1-hexene that can be compared with a catalyst that does not have an R₃Si- covering. Phys. methods were used to det. the concn. of groups on the SiO₂ surface and also to det. the loading at which site sepn. occurs. The alkylated supports can be loaded with a greater concn. of the site-isolated Rh complex, producing catalysts that have greater activity per g of catalyst and longer lifetimes than the corresponding catalysts produced with nonalkylated silica gels. Increasing the length of the alkyl group used to cover the surface decreases the effectiveness of the SiO₂ as a catalytic support and eventually leads to a catalyst surface that is not wetted by EtOH.

Keywords

catalyst prepn silica gel functionalization
rhodium complex silica immobilized catalyst
oxidn catalyst rhodium complex silica
hexene oxidn rhodium complex catalyst

Index Entries

Catalysts and Catalysis
functionalized silica gel as
Silica gel, compounds
functionalized, catalysts
Oxidation catalysts
rhodium complex immobilized on silica gel, for hexene
7803-62-5, trialkyl chloro, reaction products with silica gel
catalysts
96413-87-5, reaction products with silica gel
catalysts, for oxidn. of hexene
7440-16-6, uses and miscellaneous
catalysts, silica gel-immobilized, for oxidn. of hexene
592-41-6, reactions
oxidn. of, on rhodium complex immobilized on silica gel

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102:116266

Use of novel catalysts founded on basic-fixed hydride-carbonyl complexed for the Fischer-Tropsch synthesis.

Hemmerich, R. (Math.-Naturwiss. Fak., Tech. Hochsch. Aachen, Aachen, Fed. Rep. Ger.). Report, NP-4770473; Order No.

DE84770473, 196 pp. Avail. NTIS (US Sales Only) From: Energy Res. Abstr. 1984, 9(24), Abstr. No. 49579 (German) 1983.

DOCUMENT TYPE: Report CA Section: 51 (Fossil Fuels, Derivatives, and Related Products) Section cross-reference(s): 67

A novel method was used for fixing transition metal complexes on a carrier, the properties of such heterogenized complexes as precursors for Fischer-Tropsch catalysts were investigated. The hydridic carbonyl complexes HCo(CO)₄, HRuCo₃(CO)₁₂ and HFeCo₃(CO)₁₂ react with amine-modified silica gels in an acid-base reaction to produce surface-bound ammonium salts without the deposition of by-products. By decarbonylation in flowing H₂, a highly active metal carrier catalyst for

Fischer-Tropsch synthesis is produced. X-ray diffraction and SEM anal. revealed that the metal is present in highly dispersed amorphous form on the carrier surface. All catalyst systems have in common the pronounced tendency to form CH₄ and straight-chained hydrocarbons with high proportions of olefins.

Keywords

Fischer Tropsch immobilized carbonyl complex
transition metal carbonyl complex heterogenized
cobalt hydridocarbonyl heterogenized Fischer Tropsch
ruthenium cobalt carbonyl Fischer Tropsch
iron cobalt carbonyl Fischer Tropsch
catalyst metal complex Fischer Tropsch

Index Entries

Silica gel
amine-modified, transition metal carbonyl complexes immobilized
on, in manuf. of Fischer-Tropsch catalysts
Alkenes, preparation
manuf. of, by Fischer-Tropsch synthesis with immobilized
transition metal carbonyl complexes
Hydrogenation
of carbon monoxide, in Fischer-Tropsch synthesis, on silica
gel-immobilized transition metal complexes
Hydrogenation catalysts
silica gel-immobilized transition metal carbonyl complexes, for
Fischer-Tropsch synthesis
630-08-0, reactions
hydrogenation of, in Fischer-Tropsch synthesis, on silica
gel-immobilized transition metal complexes
16842-03-8
21750-96-9
24013-40-9
immobilized on amine-modified silica gel, in manuf. of
Fischer-Tropsch catalysts

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101:190617

Gel-immobilized metal-complex catalysts.
Kabanov, V. A.; Smetanyuk, V. I. (USSR). Itogi Nauki i Tekhn. VINITI.
Kinet. i Kataliz, (13), 213-55 From: Ref. Zh., Khim. 1984, Abstr. No.
16B4122(Russian) 1984. DOCUMENT TYPE: Journal; General
Review CA Section: 21 (General Organic Chemistry) Section
cross-reference(s): 35
Title only translated.

Keywords

review gel immobilized catalyst
metal complex gel immobilized review
olefin dimerization polymn catalyst review

Index Entries

Alkenes, reactions
dimerization and polymn. of, gel-immobilized metal complex
catalysts for
Dimerization catalysts
Polymerization catalysts
gel-immobilized metal complexes, for olefins
Coordination compounds
gel-immobilized, catalysts, for dimerization and polymn. of olefins

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101:171806

Kinetics and molecular-weight distribution during the heterogeneous catalysis of chain transfer to a monomer in the presence of immobilized cobalt porphyrin complex.

Pashchenko, D. I.; Bel'govskii, I. M.; Vinogradova, E. K.; Davydova, A. B.; Ponomarev, G. V.; Garina, L. S.; Shustov, A. S.; Sheberstov, S. V.; Enikolopov, N. S. (USSR). Materialy 3 Vses. Konf. po Khimii i Biokhimii Porfirinov, 14-16 Sent., 1982, Samarkand, 77-86 From: Ref. Zh., Khim. 1984, Abstr. No. 4B4301(Russian) 1983. DOCUMENT
TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 26
Title only translated.

Keywords

porphyrin complex chain transfer catalyst
kinetics polymn porphyrin complex catalyst
mol wt distribution heterogeneous catalysis
cobalt complex chain transfer catalyst

Index Entries

Chain-transfer catalysts
cobalt-porphyrin complex, polymer-immobilized, polymn. kinetics
and polymer mol. wt. distribution in relation to
Molecular weight
distribution of, of polymers prepd. in presence of cobalt-porphyrin
complex immobilized on polymers as chain-transfer
catalysts
Kinetics of polymerization
in presence of cobalt-porphyrin complex immobilized on polymers
as chain-transfer catalysts
7440-48-4, etioporphyrin complexes
26183-20-0, cobalt complexes
polymer-immobilized, catalysts, for chain transfer to monomers,
polymn. kinetics and polymer mol. wt. distribution in relation
to

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101:125902

Determination of the distribution of catalyst activity across a permeable membrane containing an immobilized enzyme.
Indeterminacy of a functional approach to a structural problem.
Bunow, Barry; Caplan, S. Roy (Lab. Appl. Stud., Natl. Inst. Health, Bethesda, MD 20205, USA). Biophys. J., 45(6), 1065-71 (English) 1984. CODEN: BIOJAU. ISSN: 0006-3495. DOCUMENT TYPE:
Journal CA Section: 7 (Enzymes) Section cross-reference(s): 6
Porous membranes were fabricated from collodion and impregnated with papain, inhomogeneously through the thickness of the membrane. These membranes were placed between reservoirs contg. N-a-benzoyl argininamide, a substrate for papain. The progress of the reaction was monitored by sampling the reservoirs on each side for NH₃, a reaction product. From these data the diffusion coeff., enzyme activity, and distribution of enzyme activity of the membrane were estd. The limitations of this approach are discussed in the context of the anal. of biol. transport systems with membrane-compartmented enzymes.

Keywords

membrane immobilized enzyme activity distribution
biol transport enzyme membrane compartmentation

Index Entries

Biological transport
by membranes, enzyme compartmentation in relation to
Enzymes
membrane compartmentation of, transport activity in relation to
Michaelis constant
of papain immobilized deriv.
Membrane, biological
papain immobilized in porous collodion as model for, catalytic
activity distribution of
9001-73-4
immobilized, catalytic activity distribution of, across porous
membrane
9004-70-0
porous membrane, papain immobilized in, catalytic activity
distribution of
965-03-7
reaction of, with papain immobilized deriv., kinetics of

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101:79200

Immobilized phase-transfer catalysts.
Ford, Warren T. (Wabash Coll., CA, USA). CHEMTECH, 14(7), 436-9
(English) 1984. CODEN: CHTEDD. ISSN: 0009-2703. DOCUMENT
TYPE: Journal; General Review CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms)
A review with 30 refs.

Keywords

review immobilized phase transfer catalyst
heterogeneous immobilized catalyst review

Index Entries

Phosphonium compounds
Quaternary ammonium compounds, uses and miscellaneous
catalysts, immobilized phase-transfer
Crown compounds
ethers, as immobilized phase-transfer catalysts
Catalysts and Catalysis
phase-transfer, immobilized

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101:73189

Strategies for the linkage of homogeneous catalysts to
poly(organophosphazenes).
Allcock, H. R. (Dep. Chem., Pennsylvania State Univ., University Park,
PA 16802, USA). Prepr. - Am. Chem. Soc., Div. Pet. Chem., 27(3),
652-3 (English) 1982. CODEN: ACPCAT. ISSN: 0569-3799.
DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic
High Polymers) Section cross-reference(s): 23, 67
Poly(organophosphazenes) are subjected to a variety of org. and
organometallic substitution reactions to link phosphine, carborane, and
propynyl groups to the phosphazene skeleton, and to form direct
skeletal P-metal side group units. Macromols. contg. Ph₂PC₆H₄O
groups function as carrier mols. for CuI, AuCl, H₂O₃(CO)₁₀,
Mn(CO)₂C₅H₅, RhCl(CO)₂, or Fe(CO)₃ units; the tri-Os cluster
complexes catalyze the conversion of allyl alc. [107-18-6] to
propionaldehyde [123-38-6] in a manner similar to the behavior of the
free cluster. Carboranyl derivs. provide coordination sites for

organometallic units such as $\text{Mo}(\text{CO})_3$ or $\text{RhH}(\text{PRh}_3)_2$. The propynyl phosphazenes form p-complexes with $\text{Co}_2(\text{CO})_6$ groups giving products that catalyze the cyclotrimerization reactions of acetylenes.

Keywords

phosphazene polymer carrier catalyst
transition metal complex polyphosphazene catalyst
phosphinyl polyphosphazene deriv catalyst
carboranyl polyphosphazene deriv catalyst
propynyl polyphosphazene deriv catalyst
cyclotrimerization catalyst acetylene
propionaldehyde prepn catalyst

Index Entries

Catalysts and Catalysis

poly(organophosphazene)deriv.-immobilized transition metal complexes, prepn. and properties of
Phosphazene polymers
carbonyl, complexes with transition metals, catalysts, prepn. and properties of
Trimerization catalysts
cyclo-, poly(organophosphazene) complexes with transition metals, for acetylene
Phosphazene polymers
diphenylphosphinylphenoxy, complexes with transition metals, catalysts, prepn. and properties of
Phosphazene polymers
propynyl, complexes with transition metals, catalysts, prepn. and properties of
7440-16-6, complexes with poly(organophosphazene) derivs. and triphenylphosphine
7440-48-4, complexes with carbonyl compds. and poly(organophosphazene) derivs.
7681-65-4, complexes with poly(organophosphazene) derivs.
10294-29-8, complexes with poly(organophosphazene) derivs.
25231-98-5, reaction products with trialkylamines and sodium alkoxides, complexes with transition metals
26085-02-9, reaction products with trialkylamines and sodium alkoxides, complexes with transition metals
38548-46-8, complexes with poly(organophosphazene) derivs.
41766-80-7, complexes with poly(organophosphazene) derivs.
52491-41-5, complexes with poly(organophosphazene) derivs.
54398-26-4, complexes with poly(organophosphazene) derivs.
55979-29-8, complexes with poly(organophosphazene) derivs.
catalysts, prepn. and properties of
107-18-6, reactions
conversion of, to propionaldehyde, catalysts for
74-86-2, derivs.
cyclotrimerization of, catalysts for
123-38-6, preparation
prepn. of, from allyl alc., catalysts for

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100:180741

Oxidation of toluene catalyzed by heterogenized cobalt acetate complexes.

Setinek, Karel (Inst. Chem. Process Fundam., Czech. Acad. Sci., Prague-Suchdol, Czech.). Geterog. Katal., 5th, Pt. 1, 27-32 (English) 1983. CODEN: GEKADD. DOCUMENT TYPE: Journal CA Section:

67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 22

Polymer-immobilized Co catalysts showed a catalytic effect only on

peroxide decompn. to radicals, but not on the elementary reactions in which O₂ is activated and the predominant part of the oxidn. product formed. At 80° in glacial HOAc, PhMe is not oxidized, but addn. of dioxane causes some oxidn. due to the presence of dissolved O₂. The immobilized Co(II) promotes transfer of O from peroxide formed by dioxane to PhMe.

Keywords

oxidn catalyst immobilized cobalt acetate
toluene oxidn heterogeneous catalyst

Index Entries

Oxidation catalysts
cobalt acetate, immobilized on styrene-divinylbenzene sulfonated polymer, for toluene
Kinetics of oxidation
of toluene, on cobalt acetate immobilized catalysts
7440-48-4, uses and miscellaneous
catalysis by divalent, immobilized on polymer, of oxidn. of toluene
9003-70-7, sulfonated
catalysts, cobalt acetate immobilized on, for oxidn. of toluene
108-88-3, reactions
oxidn. of, on cobalt acetate immobilized catalysts

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100:162526

The influence of intraparticle mass transfer on the activity of a gel-form polymer bound transition metal catalyst.

Roucis, John Bradley (Univ. Texas, Austin, TX, USA). 141 pp. Avail. Univ. Microfilms Int., Order No. DA8329870 From: Diss. Abstr. Int. B 1984, 44(9), 2836-7 (English) 1983. DOCUMENT TYPE: Dissertation
CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Abstract Unavailable

Keywords

intraparticle mass transfer immobilized catalyst

Index Entries

Polymers, uses and miscellaneous
catalyst, transition metals immobilized on, intraparticle mass transfer effects on activity of
Transition metals, uses and miscellaneous
catalysts, polymer-immobilized, intraparticle mass transfer effects on activity of
Mass transfer
intraparticle, of transition metal polymer-immobilized catalysts, activity in relation to
Catalysts and Catalysis
transition metal, polymer-immobilized, with gel form, intraparticle mass-transfer effects on activity of

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100:162479

Immobilized catalysts. IX. ESR study of the distribution of vanadium tetrachloride on polymer supports.

Pomogailo, A. D.; Nikitaev, A. T.; D'yachkovskii, F. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 25(1), 166-70 (Russian) 1984. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal

CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 37, 77

The distribution was studied of VCl_4 catalysts on the polymer support from polyethylene grafted to poly(4-vinylpyridine) by ESR spectrometry. There are 2 types of complexes: clusters and isolated complexes. The concns. of these complexes in the graft layer are given. The addn. of $AlEt_2Cl$ gives a highly active polymn. catalyst for ethylene. The surface structure is described.

Keywords

vanadium chloride polyethylene polyvinylpyridine catalyst
aluminum ethyl vanadium chloride catalyst polymn
ethylene polymn vanadium aluminum catalyst

Index Entries

Polymerization catalysts
aluminum-vanadium compds., on polyethylene grafted with
polyvinylpyridine, for ethylene
Surface structure
of vanadium chloride complexes on surfaces of polyethylene
grafted with polyvinylpyridine
Electron spin resonance
of vinyl tetrachloride surface reactions with polyethylene grafted with
polyvinylpyridine
7632-51-1
catalyst for polymn. from reactions of aluminum diethylchloride
and, with polyethylene grafted with polyvinylpyridine
26355-13-5
graft, catalyst from reactions of vanadium tetrachloride and
aluminum diethylchloride with, for polymn. of ethylene
74-85-1, reactions
polymn. of, aluminum-vanadium catalyst on polyethylene grafted
with polyvinylpyridine support for
96-10-6, reactions
reaction of, with vanadium tetrachloride and polyethylene grafted
with polyvinylpyridine for polymn. catalyst for ethylene

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99:201111

Polymer chain effects in polymeric catalysis.
Challa, Ger (Lab. Polym. Chem., State Univ. Groningen, Groningen
9747 AG, Neth.). J. Mol. Catal., 21, 1-16 (English) 1983. CODEN:
JMCADS. ISSN: 0304-5102. DOCUMENT TYPE: Journal; General
Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms) Section cross-reference(s): 22, 36, 38
A review on polymer-immobilized catalysts such as $Cu(II)$ complexes.
30 Refs.

Keywords

review polymer immobilized catalyst
copper polymer immobilized catalyst review

Index Entries

Polymers, uses and miscellaneous
catalysts, immobilized metal complexes as
Chains, chemical
catalytic properties of polymer-immobilized metal complexes in
relation to
Catalysts and Catalysis
polymer-immobilized metal complexes

7440-50-8, uses and miscellaneous
catalysts, polymer-immobilized

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99:28594

Polymer-supported iron-sulfur clusters.

Monteil, M. D.; Effa, J. B. Nguini; Lieto, J.; Verlaque, P.; Benlian, D.
(Lab. Chim. Coord., Univ. Provence, Marseilles 13397/13, Fr.). Inorg.
Chim. Acta, 76(5-6), L309-L311 (English) 1983. CODEN: ICHAA3.

ISSN: 0020-1693. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 7

Synthetic Fe-S clusters were attached to flexible polymers to increase
stability and provide better models of ferredoxin-type protein active
redox sites. IR spectra confirmed fixation of the cluster anions
[Fe₄(m³-S₄)(S-tert-Bu)₄]²⁻ or [Fe₄(m³-S₄)(SBz)₄]²⁻ on
poly(styrene-divinylbenzene) supports.

Keywords

iron sulfur cluster polymer immobilized
catalyst iron sulfur cluster immobilized
enzyme ferredoxin model immobilized cluster
redox catalyst immobilized iron cluster

Index Entries

Enzymes

ferredoxin-type, models, polymer-supported iron-sulfur clusters as
Redox reaction catalysts

iron-sulfur cluster complexes immobilized on polymer support as

Cluster compounds

iron, with sulfur ligands, redox active sites on polymer-immobilized

7439-89-6, sulfur cluster complexes

7704-34-9, iron cluster complexes

52523-51-0

62873-87-4

redox active sites on polymer-supported

9003-70-7, reaction products with iron-sulfur cluster complexes

redox active sites on, as model for ferredoxin-type proteins

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97:169734

Decomposition of hydrogen peroxide by heterogenized cobalt acetate
complexes.

Blazek, Vaclav; Subcik, Leopold; Setinek, Karel (Inst. Chem. Process
Fundam., Czech. Acad. Sci., Prague 16502/6, Czech.). Collect.

Czech. Chem. Commun., 47(8), 2227-34 (English) 1982. CODEN:

CCCCAK. ISSN: 0366-547X. DOCUMENT TYPE: Journal CA

Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
Mechanisms)

The mass balance of the HOAc coordinated to Co(II) ions exchanged
on a sulfonated macroporous styrene-divinylbenzene copolymer
confirmed the existence of heterogenized Co(II) acetate complexes.
The amt. of these complexes depends on crosslinking of the copolymer
and on the sp. surface of its particles. The dependence agrees with
earlier obsd. effects of these parameters on the catalytic and sorption
activity of macroporous ion exchangers. The catalytic activity of
heterogenized Co(II) acetate complexes was tested in H₂O₂ decompn.
at 30°. The bromide ions do not exert the synergetic effect obsd. on
using these complexes as catalysts for oxidn. with gaseous O.

Keywords

catalyst cobalt hydrogen peroxide decompn
acetate complex cobalt polymer immobilized

Index Entries

Dissociation catalysts
cobalt acetate complexes, immobilized on sulfonated
styrene-divinylbenzene polymer, for hydrogen peroxide
Cation exchangers
sulfonated styrene-divinylbenzene, catalyst support, for cobalt
acetate complexes
7440-48-4, uses and miscellaneous
catalyst, polymer-immobilized acetate complex, for hydrogen
peroxide decompn.
64-19-7, cobalt complexes
catalysts, polymer-immobilized, for hydrogen peroxide decompn.
7722-84-1, reactions
decompn. of, cobalt acetate polymer-immobilized complex
catalysts for

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97:61676
Silacrowns, a new class of immobilizable phase transfer catalysts.
Arkles, Barry; Peterson, William R., Jr.; King, Kevin (Petrarch Syst.
Res. Lab., Bristol, PA 19007, USA). ACS Symp. Ser., 192 (Chem.
Modif. Surf. Catal. Electrocatal.), 281-92 (English) 1982. CODEN:
ACSMC8. ISSN: 0097-6156. DOCUMENT TYPE: Journal; General
Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms)
A review with 14 refs.

Keywords

review silacrown immobilized catalyst
phase transfer catalyst silacrown review

Index Entries

Crown compounds
silacrowns, immobilized phase transfer catalyst
Catalysts and Catalysis
silacrowns, phase-transfer, prepn. and properties of free and
immobilized
Crown compounds
ethers, macrocyclic polyethylenoxysilanes, silacrowns, prepn. and
catalytic properties of
Catalysts and Catalysis
phase-transfer, immobilized, silacrowns
16984-48-8, reactions
bromide displacement by, in benzyl bromide, phase-transfer
silacrown catalysts for
541-02-6
70851-49-9
83890-22-6
83890-23-7
83890-24-8
83890-25-9
83890-26-0
83890-27-1
83890-28-2
phase transfer catalysts of, free and immobilized
57-12-5, reactions
reaction of, with allyl or benzyl bromide, phase-transfer catalysts for

71-50-1, reactions
 reaction of, with benzyl bromide, phase-transfer silacrown catalysts
 for
 100-39-0
 reaction of, with cyanide, phase-transfer silacrown catalysts for
 100-44-7, reactions
 106-95-6, reactions
 111-25-1
 111-83-1
 reaction of, with potassium cyanide, silacrown phase transfer
 catalysis for

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97:45017

Catalytic activity of organometallic compounds of polymer supported
 rhodium.
 Sariago, Renato; Oro, Luis A. (Univ. Santiago, Santiago, Chile). Bol.
 Soc. Chil. Quim., 27(2), 62-4 (Spanish) 1982. CODEN: BOCQAX.
 ISSN: 0366-1644. DOCUMENT TYPE: Journal CA Section: 67
 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
 Section cross-reference(s): 22
 The supported complexes were prep'd. by reaction of a soln. of
 [Rh(NBD)2]ClO4 (NBD = norbornadiene) in CHCl2 with a suspension of
 the supported ligand. Results for the catalytic H transfer reaction from
 iso-PrOH to PhAc and to 1-hexene in solns. of iso-PrOH or
 iso-PrOH:C6H6 = 3:2 with [Rh(NBD)L] complexes where L =
 (imidazole)2, 4,5,4',5'-tetramethylbiimidazole, polyimidazole, or
 polytetramethylbiimidazole, gave percentage redn. value of 75, 98,
 20-34, and 4-35, resp. for PhAc and 0, 0, 18-12, and 2-5, resp., for
 1-hexene.

Keywords

rhodium complex immobilized catalyst
 polymer supported rhodium complex catalyst
 hydrogen transfer rhodium complex catalyst
 redn catalyst rhodium complex
 norbornadiene rhodium complex redn catalyst
 imidazole rhodium complex redn catalyst

Index Entries

Hydrogenation catalysts
 rhodium polymer-supported complexes, for acetophenone
 7440-16-6, polymer-supported complexes
 catalyst, for redn. of acetophenone by hydrogen transfer from
 hexene
 288-32-4, rhodium complexes
 82357-29-7, rhodium complexes
 82370-43-2, rhodium complexes
 82370-44-3, rhodium complexes
 catalysts, polymer-supported, for redn. of acetophenone by
 hydrogen transfer from hexene or isopropanol
 592-41-6, reactions
 67-63-0, uses and miscellaneous
 catalytic hydrogen transfer from, to acetophenone in presence of
 rhodium polymer-supported catalysts
 121-46-0, rhodium complexes
 polymer-supported, catalysts, for redn. of acetophenone by hexene
 98-86-2, reactions
 redn. of, by catalytic hydrogen transfer from hexene or isopropanol
 in presence of rhodium polymer-supported catalysts

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96:149815

Electron transfer reduction of acetylene by catalysis of partially p-mercaptomethyl substituted polystyrene-molybdenum(IV) complexes in protic solvent.

Oguni, Nobuki; Shimazu, Shogo; Iwamoto, Yasuhiro; Nakamura, Akira (Fac. Sci., Osaka Univ., Toyonaka 560, Japan). Polym. J. (Tokyo), 13(9), 845-52 (English) 1981. CODEN: POLJB8. ISSN: 0032-3896.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 7, 23, 78

Mo complexes supported on partially p-mercaptomethyl substituted cross-linked polystyrene were prep'd. A binary system of these complexes and ferredoxin model comp'd., $[\text{Fe}_4\text{S}_4(\text{SPh})_4]^{2-}$, has excellent catalytic activity for the redn. of acetylene, compared to the corresponding unsupported Mo complexes. The redn. and reductive cleavage of N_2 were also studied as a nitrogenase model reaction.

Keywords

nitrogenase model reaction molybdenum complex
redn catalyst acetylene dinitrogen molybdenum
electron transfer redn immobilized catalyst

Index Entries

Nitrogen fixation catalysts

molybdenum(IV) immobilized complexes

Reduction catalysts

molybdenum(IV) immobilized complexes, for acetylene and nitrogen

7439-98-7, mercaptomethyl-substituted polystyrene complexes

catalysts, for electron transfer redn. in protic solvents

100-53-8, molybdenum(IV) complexes

9003-53-6, chloromethylated and mercaptomethylated,

molybdenum(IV) complexes

catalysts, for redn. of acetylene or dinitrogen

51956-20-8

catalysts, with ferredoxin model complex for redn. of acetylene

52586-83-1

catalysts, with molybdenum(IV) immobilized polystyrene complex

for redn. of acetylene or dinitrogen

16940-66-2

redn. by, of acetylene or dinitrogen in presence of molybdenum(IV)

polystyrene immobilized complex

74-86-2, reactions

redn. of, on molybdenum(IV) immobilized catalysts

75-33-2

substitution reaction of, with molybdenum(IV) dimethylamido

complex

7439-98-7, reactions

substitution reaction of, with propanethiol

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96:110835

XPS study on polymer-bound rhodium complexes.

Uematsu, Takayoshi; Hashimoto, Hidehisa (Fac. Eng., Chiba Univ.,

Chiba 260, Japan). Kogakubu Kenkyu Hokoku (Chiba Daigaku),

33(63), 99-108 (English) 1981. CODEN: CDKKAN. ISSN:

0577-6848. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,

Reaction Kinetics, and Inorganic Reaction Mechanisms)

The oxidn. state of Rh in polymer-immobilized catalysts was det'd. by

XPS. The active site is stabilized on phosphinated polystyrenes,

polyimine-type chelate resins, and sulfonated polystyrene. These

catalysts exhibit activity for olefin hydrogenation and isomerization. The binding energies indicate a valence state close to Rh(II).

Keywords

XPS rhodium polymer immobilized catalyst
hydrogenation catalyst rhodium polymer support
isomerization catalyst rhodium polymer support

Index Entries

Alkenes, reactions
hydrogenation and isomerization of, on rhodium
polymer-immobilized catalysts
Valence
of rhodium, in polymer-immobilized catalysts
Hydrogenation catalysts
Isomerization catalysts
rhodium, polymer-immobilized, XPS study of
7440-16-6, uses and miscellaneous
catalysts, polymer-immobilized, XPS study of

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96:104820

Morphology of gel-immobilized catalytic systems produced from graft copolymers of ethylene-propylene rubber and poly(vinylpyridines). Communication I.
Budantseva, T. V.; Litvinov, I. A.; Pluzhnov, S. K.; Smetanyuk, V. I.; Kabanov, V. A. (Inst. Neftekhim. Sint., Moscow, USSR). Deposited Doc., VINITI 3880-80, 14 pp. Avail. VINITI (Russian) 1980.
DOCUMENT TYPE: Report CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 23
According to electron microscopy data, the title copolymer (I) [55554-74-0], obtained by grafting 4-vinylpyridine onto SKEPT rubber (II) and useful in the prepn. of catalysts for the dimerization and polymn. of olefins, consist of inclusions of I of size 1000-3000 Å dispersed in an excess of II. In contrast to mech. mixts. of poly(4-vinylpyridine) with II, washing the copolymers with MeOH-PhMe did not remove the inclusions from the II matrix. Treatment of I with nickel acetylacetonate [3264-82-2] resulted in the formation of a Ni-polymer complex, with Ni localized in inclusions contg. poly(4-vinylpyridine) grafted chains.

Keywords

vinylpyridine grafted EPDM rubber morphol
graft copolymer support polymn catalyst
dimerization catalyst graft copolymer support
nickel catalyst gel immobilized morphol
olefin dimerization polymn catalyst

Index Entries

Alkenes, reactions
dimerization and polymn. of, gel-immobilized catalysts for, morphol. of vinylpyridine-grafted EPDM rubbers for
Dimerization catalysts
Polymerization catalysts
gel-immobilized nickel, for olefins, morphol. of
vinylpyridine-grafted EPDM rubbers for
Polymer morphology
of vinylpyridine-grafted EPDM rubbers, nickel-contg. olefin
dimerization and polymn. catalysts in relation to
3264-82-2, reaction products with vinylpyridine-grafted EPDM rubber
catalysts, for dimerization and polymn. of olefins, morphol. of

55554-74-0, reaction products with nickel acetylacetonate
graft, catalysts, for dimerization and polymn. of olefins, morphol. of
55554-74-0
graft, morphol. of, olefin dimerization and polymn. catalysts in
relation to

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96:104819

Morphology of gel-immobilized catalytic systems based on graft
copolymers of ethylene-propylene rubber and poly(vinylpyridines).
Communication 2.

Budantseva, T. V.; Litvinov, I. A.; Kabanov, V. A. (Inst. Neftekhim. Sint.
im. Topchieva, Moscow, USSR). Deposited Doc., VINITI 3879-80, 12
pp. Avail. VINITI (Russian) 1980. DOCUMENT TYPE: Report CA
Section: 35 (Chemistry of Synthetic High Polymers)

The structure of the title copolymer (I) [55554-74-0] obtained by
grafting 4-vinylpyridine onto SKEPT rubber
[ethylene-ethylidenenorbornene-propylene copolymer (II)] consists of
clusters of poly(4-vinylpyridine) (III) with fragments of II chains chem.
bonded to III. The clusters are dispersed in II and contain domains of III
formed as a result of microsegregation of the grafted chains. The size
of the clusters and of the domains is 1000-3000 and 50-200 Å, resp.
Introduction of a complex-forming metal [e.g., Ni(II)] to I results in a
complexation of the components of the clusters and increases the size
of the domains to 150-300 Å. The structure of I was investigated by
electron microscopy of films etched in O plasma.

Keywords

vinylpyridine grafted EPDM rubber morphol
graft copolymer support polymer catalyst
nickel catalyst gel immobilized morphol
olefin polymn nickel catalyst

Index Entries

Polymerization catalysts
nickel, gel-immobilized, for olefins, morphol. of
Polymer morphology
of vinylpyridine-grafted EPDM rubbers, nickel-contg. olefin polymn.
catalysts in relation to
Alkenes, reactions
polymn. of, catalysts for, gel-immobilized nickel systems as,
morphol of
7440-02-0, uses and miscellaneous
catalysts, gel-immobilized, for polymn. of olefins, morphol. of
55554-74-0
graft, support, for nickel catalysts for polymn. of olefins, morphol of

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105:103339

Study of immobilized catalysts. XIX. Study of characteristics of
distribution of copper on polymeric supports.
Nikitaev, A. T.; Pomogailo, A. D.; Golubeva, N. D.; Ivleva, I. N. (Inst.
Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 27(3), 709-13
(Russian) 1986. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT
TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and
Inorganic Reaction Mechanisms) Section cross-reference(s): 77
The distribution of Cu³⁺ ions was studied by static magnetic
susceptibility and ESR methods. Three types of Cu were found on
polyacrylic acid-grafted polyethylene: (1) isolated; (2) bound by
dipole-dipole interaction; (3) clusters with strong exchange interaction.
The av. sepn. between isolated Cu ions is 15-22 Å and between

dipole-bound complexes, ≈ 7 Å. These results are contrasted with data for other immobilized catalysts.

Keywords

copper distribution state immobilized catalyst
polymer immobilized catalyst copper

Index Entries

Catalysts and Catalysis
supports, copper-polymer, distribution and state of copper in
7440-50-8, uses and miscellaneous
catalysts, polymer-immobilized, distribution and state of copper in
9010-77-9
graft, copper immobilized on, catalysts

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105:103314

Dependence of activity and selectivity of immobilized catalysts for hydroperoxide epoxidation of olefins on the structure of carrier. Sapunov, V. N.; Lebedev, N. N.; Litvintsev, I. Yu.; Vardanyan, V. D. (D. I. Mendeleev Inst., Moscow, USSR). Int. Congr. Catal., [Proc.], 8th, Volume 5, V359-V367. Verlag Chemie: Weinheim, Fed. Rep. Ger. (English) 1984. CODEN: 55DBAG. DOCUMENT TYPE: Conference; General Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 23 A review of the authors' work. 8 Refs.

Keywords

review immobilized epoxidn catalyst
alkene hydroperoxide epoxidn catalyst review

Index Entries

Alkenes, reactions
epoxidn. of, by hydroperoxides on immobilized catalysts
Hydroperoxides
epoxidn. reaction of, with alkenes on immobilized catalysts
Epoxidation catalysts
immobilized, for hydroperoxide reaction with alkenes, activity and selectivity of

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104:215080

Enzymatic electrocatalysis: controlled potential electrolysis and cosubstrate regeneration with immobilized enzyme modified electrode. Bourdillon, Christian; Laval, Jean Marc; Thomas, Daniel (Lab. Technol. Enzym., Univ. Technol. Compiègne, Compiègne 60206, Fr.). J. Electrochem. Soc., 133(4), 706-11 (English) 1986. CODEN: JESQAN. ISSN: 0013-4651. DOCUMENT TYPE: Journal CA Section: 72 (Electrochemistry) Section cross-reference(s): 7 Catalytic currents obtained by coupling between electrochem. reaction and enzymic catalysis were studied under 2 configurations: with the enzyme in soln., or with the enzyme immobilized onto the electrode surface. The corresponding set of differential equations, describing electrolyzing currents as a function of time, cannot be solved anal., and a numerical method is applied to give approx. solns. Example simulations are made with parameter values suitable for glucose oxidase as a catalyst and benzoquinone/hydroquinone as the cosubstrate redox couple. In each configuration, a quasi-steady-state

current was obtained as the consequence of the rate balance between the enzymic and electrochem. reactions. A comparison of efficiency between the 2 situations proves that direct immobilization of the catalyst on the electrode surface (enzymic electrocatalysis) gives the best results. For example, it was shown that catalytic current is independent of mass transfer in such a case. Exptl. results obtained with a reticulated vitreous C electrode modified (or not) by a glucose oxidase monolayer confirm this theor. anal.

Keywords

benzoquinone hydroquinone redox electrochem catalytic
glucose oxidase catalyst carbon electrode

Index Entries

Enzymes

catalysts, immobilized on electrodes, controlled potential
electrolysis and cosubstrate regeneration in relation to

Electrodes

enzyme-modified, cosubstrate regeneration in relation to

Redox reaction catalysts

electrochem., enzymes, for benzoquinone-hydroquinone system

Redox reaction

electrochem., on immobilized enzyme-modified electrodes

9001-37-0

catalyst, for benzoquinone/hydroquinone redox couple,

immobilized on electrode

106-51-4, reactions

123-31-9, reactions

electrochem. reaction of redox couple contg., glucose oxidase as
catalyst for

7440-44-0, uses and miscellaneous

vitreous, electrodes, modified by glucose oxidase monolayer,

controlled potential electrolysis and cosubstrate

regeneration with

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103:192321

Universal enzymic catalyst for reactions in water and in organic
solvent. Catalytic activity and stability of α -chymotrypsin entrapped
into colloidal particles of cross-linked polyacrylamide.

Abakumova, E. G.; Levashov, A. V.; Berezin, I. V.; Martinek, K. (Mosk.
Gos. Univ., Moscow, USSR). Dokl. Akad. Nauk SSSR, 283(1), 136-9

[Phys. Chem.] (Russian) 1985. CODEN: DANKAS. ISSN: 0002-3264.

DOCUMENT TYPE: Journal CA Section: 7 (Enzymes)

α -Chymotrypsin (I) immobilized in polyacrylamide crosslinked colloidal
particles showed similar thermostability to native I. The temp. max. for
hydrolysis of N-acetyl-L-tyrosine Et ester by native and immobilized I
were 45 and 65-70°, resp. More importantly, immobilized I showed
considerably greater activity in org. media than did native I. In
phosphate buffer, octane contg. 0.17M Aerosol OT and 5.5% H₂O, and
in octane contg. 5.5% H₂O, the immobilized I showed 40, 40, and 30%,
resp., of the activity of native I in phosphate buffer alone, whereas
native I showed very little activity in the org. systems. Thus, the
immobilized I is suitable for studying the reactions of this enzyme in
both aq. and org. media.

Keywords

chymotrypsin immobilized polyacrylamide reaction medium

Index Entries

Polyamides, uses and miscellaneous
crosslinked colloidal particles, a-chymotrypsin immobilized in, for
enzyme reaction in aq. and org. media
Kinetics, enzymic
of a-chymotrypsin native and polyacrylamide-immobilized derivs.
Solvent effect
on chymotrypsin activity, immobilization on polyacrylamide effect on
9003-05-8
crosslinked colloidal particles, a-chymotrypsin immobilized in, for
enzyme reaction in aq. and org. media
9004-07-3
immobilization of, in polyacrylamide crosslinked colloidal particles,
for enzyme reactions in aq. and org. media
840-97-1
reaction of, with a-chymotrypsin native and
polyacrylamide-immobilized deriv. in aq. and org. media,
kinetics of
111-65-9, uses and miscellaneous
577-11-7
a-chymotrypsin immobilized deriv. reaction in presence of

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103:166794

Polymeric bipyridines as chelating agents and catalysts.
Neckers, Douglas C. (Dep. Chem., Bowling Green State Univ., Bowling
Green, OH 43403, USA). Met.-Containing Polym. Syst., 385-403.
Edited by: Sheats, John E.; Carraher, Charles E., Jr.; Pittman, Charles
U., Jr. Plenum: New York, N. Y. (English) 1985. CODEN: 54DFAL.
DOCUMENT TYPE: Conference; General Review CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
A review with emphasis on prepn. and catalytic activity of Pd
complexes with polymeric bipyridines. Selective alkene hydrogenation
is discussed. 15 Refs.

Keywords

review polymer bipyridine catalyst chelate
palladium bipyridine immobilized catalyst review
alkene hydrogenation immobilized catalyst review

Index Entries

Transition metals, compounds
chelates with polymeric bipyridines, catalysts
Alkenes, reactions
hydrogenation of, on transition metal polymeric bipyridine chelate
catalysts
Catalysts and Catalysis
Hydrogenation catalysts
transition metal-polymeric bipyridine chelates
366-18-7, polymer-immobilized, transition metal chelates
catalyst
7440-05-3, chelates with polymeric bipyridines
catalysts, for hydrogenation of alkenes

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103:129804

Influence of sulfate ligands on the catalytic activity of cobalt complexes.
Ponec, Robert; Setinek, Karel (Inst. Chem. Proc. Fund., Czech. Acad.
Sci., Prague 165 02, Czech.). J. Mol. Catal., 32(2), 201-10 (English)
1985. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE:
Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms)

The effect of sulfate ligands on the activation of mol. O by Co complexes was analyzed theor. by using simple quantum chem. calcns.

The presence of sulfate ligands coordinated to the Co atom makes the activation of O very difficult. The exptl. results indicate, in agreement with theor. conclusions, that the oxidative inactivity of Co catalysts heterogenized on sulfonated ion exchange resins cannot be ascribed to the effect of the heterogenization itself, but rather reflects the inherent deactivating effect of sulfate ligands.

Keywords

sulfate ligand effect catalyst activity
cobalt sulfato complex catalyst activity
oxygen activation cobalt complex catalyst
deactivation cobalt catalyst sulfonic resin

Index Entries

Oxidation catalysts
cobalt complexes, immobilized on sulfonic resins, oxygen
activation on
7782-44-7, reactions
activation of, by cobalt complexes immobilized on sulfonic acid
resin, sulfato ligand effect on
7440-48-4, uses and miscellaneous
catalysts, for oxidn. of org. compds. immobilized on sulfonic acid
resins, sulfato ligand effect on oxygen activation by
9003-70-7, sulfonated, cobalt complexes
catalysts, for oxidn. of org. compds., sulfato ligand effect on oxygen
activation on

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102:173414

Hydrosilylation method and catalyst.

Williams, Robert E., Jr. (General Electric Co., USA). U.S. US 4503160

A 5 Mar 1985, 6 pp. (English). (United States of America). CODEN:

USXXAM. CLASS: ICM: B01J031-12. ICS: B01J031-30;

C08G077-06; C07F007-08. NCL: 502158000. APPLICATION: US

83-527538 29 Aug 1983. DOCUMENT TYPE: Patent CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 29

A hydrosilylation catalyst is described with atoms anchored onto a hydroxylated oxide of Si or Al Pt-S linkages through S organosiloxy groups. A hydrosilylation method and a method for making the Pt catalyst are also described.

Keywords

hydrosilylation catalyst immobilized platinum

Index Entries

Hydrosilylation catalysts
platinum, immobilized on alumina or silica supports contg.
organosulfur bonded phase
4420-74-0, reaction products with alumina or silica
catalyst, platinum immobilized on, for hydrosilylation
7440-06-4, uses and miscellaneous
catalysts, for hydrosilylation
141-57-1
2550-06-3
7351-61-3
13810-04-3
79876-59-8

prepn. of, platinum catalyst for

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102:138490

Immobilized catalyst for hydrosilylation.

Krysenko, L. V.; Brovko, V. S.; Skvortsov, N. K.; Shiballo, V. G.;
Reikhsfel'd, V. O. (Leningrad Technological Institute, USSR). U.S.S.R.
SU 1128978 A1 15 Dec 1984 From: Otkrytiya, Izobret. 1984, (46), 26.

(Russian). (Union of Soviet Socialist Republics). CODEN: URXXAF.

CLASS: ICM: B01J037-02. ICS: B01J023-74. APPLICATION: SU

82-3493040 22 Sep 1982. DOCUMENT TYPE: Patent CA Section:

67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

The immobilized catalyst is produced by treating nickel
chloride-impregnated silica gel with functionally substituted
organosilane, the resulting silica gel is dried, treated with a Group VIII
metal salt soln., washed, and the resulting catalyst is dried. The cost of
the catalyst is reduced by using Ni chloride as the Group VIII metal salt
and by using (g-methyldiethoxysilyl)propyldibutylphosphine oxide,
(g-methylidimethoxysilyl) propyldiphenylphosphine oxide, or
triethoxysilylmethyldibutylphosphine oxide as the functionally substituted
organosilane.

Keywords

immobilized hydrosilylation catalyst
phosphine oxide alkoxysilylalkyl hydrosilylation catalyst
silica gel phosphine oxide impregnated

Index Entries

Hydrosilylation catalysts

alkoxysilylalkylphosphine oxide reacted with nickel
chloride-impregnated silica gel

37211-05-5

catalyst prep. by impregnation silica gel with, and reaction with
alkoxysilylalkylphosphine oxides, for hydrosilylation

95606-55-6

95606-56-7

catalyst-precursor, reacted with nickel chloride-impregnated silica
gel, for hydrosilylation

95606-54-5

catalysts-precursor, reacted with nickel chloride-impregnated silica
gel, for hydrosilylation

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102:101202

Preparation and reactivity of nickel(0) catalysts immobilized on
poly(vinylpyridine).

Schuchardt, Ulf; Dias, Francisco Santos (Inst. Quim., Univ. Estadual
Campinas, Campinas 13100, Brazil). Actas Simp. Iberoam. Catal.,
9th, Volume 2, 1611-12. Soc. Iberoam. Catal.: Lisbon, Port.

(Portuguese) 1984. CODEN: 52TUAU. DOCUMENT TYPE:

Conference CA Section: 67 (Catalysis, Reaction Kinetics, and
Inorganic Reaction Mechanisms)

Expts. with Ni anchored on linear and crosslinked poly(4-vinylpyridine)
and poly(2-vinylpyridine), showed catalytic activity only with the Ni
anchored on the linear supports. High selectivity for the
cyclootrimerization of butadiene was obsd.

Keywords

nickel immobilized polyvinylpyridine catalyst
cyclootrimerization catalyst butadiene nickel

Index Entries

Trimerization catalysts
 cyclo-, nickel immobilized on polyvinyl pyridine, for butadiene
 Catalysts and Catalysis
 nickel-polyvinyl pyridine, prepn. and reactivity of
 7440-02-0, uses and miscellaneous
 catalysts, immobilized on polyvinyl pyridine for cyclotrimerization
 of butadiene
 25014-15-7
 25232-41-1
 catalysts, nickel immobilized on, for cyclotrimerization of
 butadiene
 106-99-0, uses and miscellaneous
 cyclotrimerization of, on nickel-polyvinylpyridine catalysts

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100:92024

The influence of intraparticle mass transfer on the activity of a gel-form
 polymer-bound transition metal catalyst.

Roucis, John B.; Ekerdt, John G. (Dep. Chem. Eng., Univ. Texas,
 Austin, TX 78712, USA). J. Catal., 86(1), 32-47 (English) 1984.

CODEN: JCTLA5. ISSN: 0021-9517. DOCUMENT TYPE: Journal CA

Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
 Mechanisms)

A math. model was developed to investigate the influence of substrate
 intraparticle mass transport limitations on the hydrogenation rate of
 cyclohexene and cyclooctene at 25 to 50°, 1 atm H pressure, over
 RhCl(PPh₃)₃ bound to polystyrene-divinylbenzene (DVB) polymer
 beads. Initial solute concns. of ~0.16M were used for the reaction rate
 studies. Intraparticle transport limitations were detd. to be negligible
 within the 200-400 mesh, 1, 2, and 3% DVB catalyst beads under the
 given reaction conditions. Changes in the redn. rate of cyclooctene,
 relative to cyclohexene, were not caused by differences in intraparticle
 diffusion rates. Alterations in selectivity were related to the catalyst
 bead swelling ratio implying that steric effects induced by the presence
 of the polymer support in the vicinity of active Rh affected intrinsic
 activity. Intrinsic activity depends on polymer crosslink d. and
 functionalized swelling ratio. Studies of the equil. distribution of
 substrate between the solvent-swollen polymer phase and the
 surrounding bulk phase soln. indicated that the substrate distributed
 uniformly for the low DVB crosslinked beads used. The math. model
 was used to study the measured reaction rate for an intraparticle mass
 transport influenced system: hydrogenation of cyclohexene and
 cyclooctene over Wilkinson's complex supported on 18-20 mesh, 3%
 DVB polymer beads.

Keywords

hydrogenation catalyst intraparticle mass transfer
 rhodium phosphine chloro complex catalyst
 gel polymer bound complex catalyst
 transition metal polymer bound catalyst

Index Entries

Mass transfer
 intraparticle, activity of metal complex-polymer support catalysts in
 relation to
 Process simulation, physicochemical
 mass transfer, intraparticle, in polymer-bound metal catalysts
 Kinetics of hydrogenation
 of cycloalkanes, on rhodium complex-polymer support catalysts

Hydrogenation catalysts
rhodium, polymer-immobilized, for hydrogenation, intraparticle
mass transfer effects on activity in
7440-16-6, uses and miscellaneous
14694-95-2
catalysts, polymer-immobilized, for hydrogenation
110-83-8, reactions
931-88-4
hydrogenation of, on rhodium complex-polymer support catalysts

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100:68804
Immobilized catalyst system in hydrogenated hydroxylated
polybutadiene for ethylene polymerization.
Forte, Maria Madalena Camargo; Gomes, Ailton de Souza; Quijada,
Raul (Inst. Macromol., Univ. Fed. Rio de Janeiro, Rio de Janeiro,
Brazil). J. Polym. Sci., Polym. Lett. Ed., 22(1), 25-30 (English) 1984.
CODEN: JPYBAN. ISSN: 0360-6384. DOCUMENT TYPE: Journal
CA Section: 35 (Chemistry of Synthetic High Polymers)
The influence of the degree of hydrogenation of the hydroxylated
polybutadiene support on the TiCl_4 -(iso-Bu) $_3\text{Al}$ [100-99-2] catalyst
activity in the polymn. of C_2H_4 was investigated. The catalytic activity
was slightly increased when an inert support was used.

Keywords

hydrogenation polybutadiene catalyst support titanium
titanium chloride polymn catalyst ethylene
aluminum isobutyl polymn catalyst ethylene
polyethylene prepn catalyst

Index Entries

Alkanes, uses and miscellaneous
supports, for titanium tetrachloride catalyst, for polymn. of ethylene
Polymerization catalysts
titanium tetrachloride-triisobutylaluminum, on hydrogenated
hydroxylated polybutadiene supports, for ethylene
100-99-2, uses and miscellaneous
catalysts, for polymn. of ethylene
7550-45-0, uses and miscellaneous
catalysts, supported, for polymn. of ethylene
9002-88-4
prepn. of, catalysts for
9003-17-2, hydrogenated hydroxylated
supports, for aluminum-titanium catalysts, for polymn. of ethylene

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100:40321
Polymer-bound phosphine catalysts.
Holy, Norman L. (Dep. Chem., West. Kentucky Univ., Bowling Green,
KY 42101, USA). Homogeneous Catal. Met. Phosphine Complexes,
443-84. Edited by: Pignolet, Louis H. Plenum: New York, N. Y.
(English) 1983. CODEN: 50TZAX. DOCUMENT TYPE: Conference;
General Review CA Section: 67 (Catalysis, Reaction Kinetics, and
Inorganic Reaction Mechanisms)
A review on polymer-immobilized transition metal phosphine complex
catalysts. 150 Refs.

Keywords

review polymer immobilized phosphine catalyst
transition metal phosphine catalyst review

Index Entries

Polymers, uses and miscellaneous
catalysts, transition metal phosphine complexes immobilized on
Transition metals, compounds
phosphine complexes, polymer-immobilized, catalysts
Catalysts and Catalysis
transition metal phosphine complexes, polymer-immobilized
7803-51-2, transition metal complexes
catalysts, polymer-immobilized

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100:26461

Silica-immobilized binuclear chromium-molybdenum complexes.
Buevskaya, O. V.; Ismailov, E. G.; Aliev, S. M.; Sokolovskii, V. D. (Inst. Catal., Novosibirsk, USSR). React. Kinet. Catal. Lett., 22(3-4), 345-50 (English) 1983. CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT
TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
ESR and UV spectra of a binuclear complex $(\text{Bu}_4\text{N})_3\text{CrMoOCl}_9$ in soln. and supported on SiO_2 were studied. Upon fixing this complex followed by oxidn.-redn. treatment, a highly disperse state is obsd., as evidence by the ESR spectra of the Cr^{3+} ions. This indicates that oxide catalysts prep'd. from organometallic complexes by high temp. oxidn.-redn. contain transition metal cations in a disperse state.

Keywords

chromium molybdenum catalyst prepn
binuclear chromium molybdenum complex decompn
silica immobilized binuclear complex
ESR chromium molybdenum binuclear complex

Index Entries

Catalysts and Catalysis
chromium-molybdenum oxide, prep'd. by decompn. of binuclear complex
Electron spin resonance
of chromium-molybdenum binuclear complex, in soln. and immobilized on silica
59830-96-5
ESR of, in soln. and immobilized on silica
1313-27-5, uses and miscellaneous
catalyst, with chromium oxide, chromium dispersion in
1308-38-9, uses and miscellaneous
catalyst, with molybdenum oxide, chromium dispersion in

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99:6106

Immobilized catalysts. IV. nature of the distribution of fixed components of metal-complex catalysts by the spin labeling method.
Bravaya, N. M.; Pomogailo, A. D.; D'yachkovskii, F. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 24(2), 403-7 (Russian) 1983. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal
CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 67
The title catalysts were prep'd. from TiCl_4 or Et_2AlCl and diallylamine-grafted polyethylene (thickness of grafted layer 100-300 Å), and the distribution of Ti or Al in the catalyst was det'd. by treating it with 4-hydroxy-2,2,6,6-tetramethyl-1-piperidinoxyl [2226-96-2] and

measuring the ESR of the products. The max. content of spin labels was 48 and 4.5 mol% for Al and Ti, resp. The metal contg. centers were distributed homogeneously in the depth of the grafted layer or as aggregates in the outer portion of the grafted layer. The distance between NO \times groups in catalysts contg. 4.5 and 48 mol% spin label (based on Al) was 30 and 17 Å, resp.

Keywords

polymn catalyst metal distribution
titanium distribution polymn catalyst
aluminum distribution polymn catalyst
allylamine grafted polyethylene catalyst
spin label metal catalyst
nitroxyl spin label catalyst

Index Entries

Polymerization catalysts
titanium and aluminum compd. reaction products with
diallylamine-ethylene graft polymers, metal distribution in
96-10-6, reaction products with allylamine-grafted polyethylene
7550-45-0, reaction products with allylamine-grafted polyethylene
catalysts, for polymn., metal distribution in
25155-49-1, reaction products with titanium and aluminum compds.
graft, catalysts for polymn., metal distribution in
2226-96-2
spin label, for metal distribution detn. in polymn. catalysts

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97:169672

Attachment and characterization of ionic triiron carbonyl clusters onto functionalized polystyrene and silica supports.
N'Guini Effa, Jean Baptiste; Lieto, J.; Aune, Jean Pierre (Cent. Saint Jerome, Inst. Petroleochim., Marseille 13397, Fr.). Inorg. Chim. Acta, 65(3), L105-L106 (English) 1982. CODEN: ICHAA3. ISSN: 0020-1693. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
The cluster HFe $_3$ (CO) $_{11}$ - was attached to polystyrene-divinylbenzene resins contg. CH $_2$ NMe $_3^+$, Cl- groups or to aminoalkyl bonded silicas contg. (CH $_2$) $_3$ NEt $_3^+$, Cl groups by anion exchange with Cl-. These ionically bound clusters exhibited poor stability in the presence of O (decomp. after 10 min). Similar decompn. occurred on heating at 363 K in inert atm. Flowing CO at 298 K did not restore the original IR spectrum, and a brown color indicating decompn. products was noted. Electron microg. showed the presence of Fe crystallites (20-100 Å).

Keywords

iron carbonyl cluster immobilized catalyst

Index Entries

Quaternary ammonium compounds, polymers
catalyst supports, with immobilized iron carbonyl clusters
Catalysts and Catalysis
iron carbonyl cluster, immobilized on polystyrene or silica support
Cluster compounds
iron, catalysts, immobilized on polystyrene or silica support
55188-22-2
catalysts, immobilized on polystyrene or silica support by ionic bonding with alkyl ammonium group

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97:79598`

Phase transfer catalysts. Polyethylene glycols immobilized onto metal oxide surfaces.

Sawicki, Robert A. (Beacon Res. Lab., Texaco Inc., Beacon, NY 12508, USA). Tetrahedron Lett., 23(22), 2249-52 (English) 1982.

CODEN: TELEAY. ISSN: 0040-4039. DOCUMENT TYPE: Journal

CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 25, 35

Catalysts prepd. by treating $H[O(CH_2)_2]_nOR$ (I; R = H, Me) with either Al_2O_3 or silica gel were effective phase-transfer agents in both displacement and oxidn. reactions. E.g., I (R = Me) of av. mol. wt. 350 was refluxed 3 h with Al_2O_3 in PhMe with azeotropic H_2O removal to give a catalyst contg. 0.17 g polymer/g support. The catalyst was effective in promoting the oxidn. of $PhCH_2OH$ to $PhCHO$ by $NaOCl$ in a CH_2Cl_2/H_2O 2-phase system.

Keywords

phase transfer catalyst supported polymer
polyethylene oxide alumina silica catalyst
oxidn phase transfer catalyst
substitution phase transfer catalyst
benzyl alc oxidn catalyst

Index Entries

Silica gel, uses and miscellaneous
catalyst from polyethylene glycols and, for phase-transfer reactions
Oxidation catalysts
Substitution reaction catalysts
phase-transfer, polyethylene glycols immobilized on alumina or silica gel
9004-74-4
25322-68-3
catalysts from alumina or silica gel and, for phase-transfer reactions
1344-28-1, uses and miscellaneous
catalysts from polyethylene glycols and, for phase-transfer reactions
100-51-6, reactions
oxidn. of, by sodium hypochlorite, phase transfer-catalyzed
109-65-9
substitution reaction of, with potassium acetate, phase-transfer catalytic

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97:61793

Polymeric catalytic composition and its use for hydrogenation of unsaturated compounds.

Chopard-Casadevall, Claude; Chauvin, Yves (Institut Francais du Petrole, Fr.). Fr. Demande FR 2451221 A1 10 Oct 1980, 8 pp.

(French). (France). CODEN: FRXXBL. CLASS: IC: B01J037-00;

B01J031-06; B01J031-12; C07C005-02. APPLICATION: FR 79-6935

16 Mar 1979. DOCUMENT TYPE: Patent CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 45

Polymer-immobilized transition metal carboxylate hydrogenation catalysts (reduced by organometallic compds. such as Al trialkyls), which act selectively on unsatd. org. compds., were prepd. A Me methacrylate-styrene-divinylbenzene copolymer was prepd. and refluxed with $Co(II)$ acetylacetonate in PhMe soln. Loss of acetylacetonate occurred in PhMe soln. Loss of acetylacetonate leaves $Co(II)$ bound to the polymer. Redn. with $Al(iso-Bu)_3$ in C_6H_6 gives the catalyst. Conversion of 3,3-dimethyl-1-butene to 2,2-dimethylbutane

was complete after 1 h agitation (40°) in the presence of this catalyst.

Keywords

hydrogenation catalyst polymer immobilized
cobalt polymer immobilized hydrogenation catalyst

Index Entries

Transition metals, uses and miscellaneous
catalysts, for hydrogenation of unsatd. compds.,
polymer-immobilized
Hydrogenation catalysts
transition metal complexes, polymer-immobilized, for unsatd.
compds.
9017-43-0, cobalt complexes
catalysts, for hydrogenation of unsatd. compds.
7440-48-4, uses and miscellaneous
catalysts, for hydrogenation of unsatd. compds.,
polymer-immobilized

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96:58477

Polymer-supported transition metal catalysts: established results;
limitations and potential developments.
Ciardelli, Francesco; Braca, Giuseppe; Carlini, Carlo; Sbrana, Glauco;
Valentini, Giorgio (Ist. Chim. Org. Ind., Univ. Pisa, Pisa 56100, Italy). J.
Mol. Catal., 14(1), 1-17 (English) 1982. CODEN: JMCADS. ISSN:
0304-5102. DOCUMENT TYPE: Journal; General Review CA Section:
67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
A review with 58 refs.

Keywords

review polymer immobilized catalyst
transition metal immobilized catalyst review

Index Entries

Polymers, uses and miscellaneous
catalyst supports, for transition metal complexes
Transition metals, uses and miscellaneous
catalysts, polymer-immobilized
Catalysts and Catalysis
transition metal, polymer-immobilized

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96:30822

Preparation of enzyme catalyst and its application.
(Miura, Yoshiharu, Japan). Jpn. Kokai Tokkyo Koho JP 56131389 A2
14 Oct 1981 Showa, 5 pp. (Japanese). (Japan). CODEN: JKXXAF.
CLASS: IC: C12N011-18; C12P007-40. APPLICATION: JP 80-31687
14 Mar 1980. DOCUMENT TYPE: Patent CA Section: 7 (Enzymes)
ATP-requiring enzymes and ATP-producing enzymes are immobilized
on cation-exchanger support and used in catalyzing the phosphate
transfer reaction in the presence of phosphate donor and phosphate
acceptor. Thus, hexokinase (HK) and creatine kinase (CK) were
immobilized on a CNBr-activated QAE-Sephadex. The immobilized
HK-CK prepn. catalyzed formation of glucose 6-phosphate in a
reaction mixt. contg. creatine phosphate (phosphate donor), glucose
(phosphate acceptor), ATP, and Mg²⁺. The K_m of the
QAE-Sephadex-immobilized HK-CK prepn. for ATP was only 0.06 mM,
whereas that of the intact and Sephadex 4B-immobilized enzymes was

0.25 and 0.5 mM, resp.

Keywords

ATP enzyme immobilization
 creatine kinase immobilization
 hexokinase immobilization
 cation exchanger ATP enzyme immobilization

Index Entries

Enzymes

ATP-producing, immobilization of ATP-requiring enzymes and, on
 cation exchangers

Cation exchangers

ATP-requiring and ATP-producing enzymes immobilization on

Enzymes

ATP-requiring, immobilization of ATP-producing enzymes and, on
 cation exchangers

Michaelis constant

of creatine kinase-hexokinase immobilized derivs.

Phosphorylation, biological

of glucose, by creatine kinase-hexokinase immobilized derivs.

52219-08-6

ATP-requiring and ATP-producing enzymes immobilization on

56-73-5

formation of, from creatine phosphate and glucose, by creatine
 kinase-hexokinase immobilized derivs.

67-07-2

glucose 6-phosphate formation from glucose and, by creatine
 kinase-hexokinase immobilized derivs.

9001-59-6

immobilization of carbamoyl phosphate synthetase and lactate
 dehydrogenase and, on QAE-Sephadex

9001-60-9

immobilization of carbamoylphosphate synthetase and pyruvate
 kinase and, on QAE-Sephadex

9001-15-4

immobilization of hexokinase and, on QAE-Sephadex

9026-23-7

immobilization of lactate dehydrogenase and pyruvate kinase and,
 on QAE-Sephadex

50-99-7, reactions

phosphorylation of, by creatine kinase-hexokinase immobilized
 derivs.

56-65-5, reactions

reaction of, with creatine kinase-hexokinase immobilized derivs.,
 kinetics of

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105:171419

Phase-transfer catalysts immobilized on polymeric supports.

Goldberg, Yu. Sh.; Shimanskaya, M. V. (IOS, Riga, USSR). Zh. Vses.

Khim. O-va. im. D. I. Mendeleeva, 31(2), 149-57 (Russian) 1986.

CODEN: ZVKOA6. ISSN: 0373-0247. DOCUMENT TYPE: Journal;

General Review CA Section: 21 (General Organic Chemistry)

A review with 89 refs. including polymer-attached onium salts,
 macrocyclic polyethers, and other catalysts.

Keywords

review polymer bound catalyst
 phase transfer catalyst immobilized review

Index Entries

Polymers, compounds
phase-transfer catalyst-contg.
Catalysts and Catalysis
phase-transfer, immobilized on polymer supports

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104:193864

Surface characterization of systems with diphenylphosphinoethylsilane immobilized on silica gel.

Rudzinski, Walter E.; Montgomery, Tyra L.; Frye, James S.; Hawkins, Bruce L.; Maciel, Gary E. (Dep. Chem., Southwest Texas State Univ., San Marcos, TX 78666, USA). J. Catal., 98(2), 444-56 (English) 1986.

CODEN: JCTLA5. ISSN: 0021-9517. DOCUMENT TYPE: Journal

CA Section: 66 (Surface Chemistry and Colloids) Section

cross-reference(s): 67

Diphenylphosphinoethyltriethoxysilane and alkylsilylating reagents were reacted with silica gel to produce a surface with anchored ligands within a hydrophobic matrix. The extent of surface coverage was detd. by using elemental anal. data. Cross-polarization/magic angle spinning NMR contributed toward a description of the diphenylphosphinoethylsilyl anchored on the surface. By using high-performance liq. chromatog., the extent of substrate coverage and ligand stability were evaluated. The exptl. data provide some insight into the synthetic procedure which is most effective for the prepn. of stable diphenylphosphine moieties immobilized on silica gel. Since diphenylphosphinoethylsilyl is often used to immobilize metal complexes, the information should be useful for optimizing systems for use in heterogeneous catalysis.

Keywords

chemisorbed phosphinoethoxysilane silica silylating agent
catalyst prepn immobilized silica NMR

Index Entries

Catalysts and Catalysis
immobilized, surface silylating agents for prepn. of
Silica gel, compounds
reaction products with silylating agents, NMR study of
Silylation
surface, in immobilized-catalyst prepn.
75-77-4, reaction products with silica gel
18586-39-5, reaction products with silica gel
18643-08-8, reaction products with silica gel
NMR study of

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104:138086

Conducting polymer film electrodes with immobilized catalytic sites. Mizutani, Fumio; Iijima, Seiichiro; Tanabe, Yoshikazu; Tsuda, Keishiro (Res. Inst. Polym. Text., Ibaraki 305, Japan). J. Chem. Soc., Chem. Commun., (23), 1728-9 (English) 1985. CODEN: JCCCAT. ISSN:

0022-4936. DOCUMENT TYPE: Journal CA Section: 72

(Electrochemistry) Section cross-reference(s): 35, 38, 67

A new technique is described for the manuf. of elec. conducting polypyrrole films contg. catalytic sites. Catalysts Pt black, Co(II) phthalocyanine(I), or Co(II) meso-tetraphenylporphine were dispersed in THF solns. of PVC and the mixt. was cast into films on the surface of a glassy C electrode. The coated electrode was used as a working electrode for the electropolymn. of pyrrole in MeCN contg. LiClO₄ to

give composite catalytic electrodes. Cyclic voltammograms for O redn. on the catalytic electrodes are reported. The I-contg. electrode showed catalytic activity in a variety of reactions.

Keywords

catalyst immobilization polymer film electrode
pyrrole electrochem polymn PVC film

Index Entries

Catalysts and Catalysis
immobilization of, in polymer film electrodes
Electrodes
polymer-film, contg. immobilized catalyst, manuf. of
7440-06-4, uses and miscellaneous
black, catalysts, immobilization of, in polymer film electrodes
3317-67-7
14172-90-8
catalysts, immobilization of, in polymer film electrodes
30604-81-0
electrodes, contg. immobilized catalysts, manuf. of, by
electropolymn. on PVC substrate
9002-86-2
electrodes, of polypyrrole blends of, contg. immobilized catalysts,
manuf. of

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104:116806

Influence of the preparative procedure on the catalytic activity of
polymer-supported $\text{RhCl}(\text{PPh}_3)_3$ and $\text{RuCl}_2(\text{PPh}_3)_3$.
Torrioni, S.; Innorta, G.; Foffani, A.; Scagnolari, F.; Modelli, A. (Ist. Chim.
"G. Ciamician", Univ. Bologna, Bologna 40126, Italy). J. Mol. Catal.,
33(1), 37-46 (English) 1985. CODEN: JMCADS. ISSN: 0304-5102.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms) Section
cross-reference(s): 22

The catalytic activity of polymer-supported $\text{RhCl}(\text{PPh}_3)_3$ and
 $\text{RuCl}_2(\text{PPh}_3)_3$ (I) strongly depend on the prepn. procedures; absence of
uncoordinated PPh_2 groups in the polymer beads and bianchoring of
the complex are both necessary for the catalytic activity. The kinetic
mechanism of the hydrogenation of terminal olefins by
polymer-supported I is similar to that proposed for the homogeneous
reaction.

Keywords

alkene hydrogenation catalyst polymer immobilized
rhodium hydrogenation catalyst phosphine complex
ruthenium chloro phosphine complex catalyst

Index Entries

Alkenes, reactions
hydrogenation of, on rhodium or ruthenium chloro-phosphine
polymer-supported catalysts
Kinetics of hydrogenation
of hexene, on polymer-supported rhodium or ruthenium
chloro-phosphine complex catalyst
Hydrogenation catalysts
rhodium and ruthenium chloro-phosphine complexes, prepn. effect
on activity of polymer-supported
14694-95-2
40237-23-8

catalysts, for hydrogenation of alkenes, prepn. effect on activity of
polymer-supported
592-41-6, reactions
hydrogenation of, on rhodium or ruthenium chloro-phosphine
complex polymer-supported catalyst

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102:210003

Estimation of the diffusional hindrance in polymer-attached active
group catalysis. II. Effective diffusion coefficients in liquid-solid
isothermal systems.

Iditoiu, Cornelia; Segal, E.; Mihai, Stela (Rom.). Bul. Stiint. Teh. Inst.
Politeh. "Traian Vuia" Timisoara, Ser. Chim., 29(1-2), 71-6 (English)

1984. CODEN: BTICBN. ISSN: 0378-9675. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms)

Diffusion-control was studied during cumene hydroperoxide decompn.
catalyzed by sulfonic acid groups on polystyrene-divinylbenzene resins.
Except for 3 resins exhibiting chem. reaction control, the overall
process in most resins is controlled by internal diffusion in the resin
particle.

Keywords

sulfonic acid catalyst immobilized dissocn
diffusion control sulfonic acid exchanger
cumene hydroperoxide decompn resin catalyst

Index Entries

Dissociation catalysts

cationic exchangers, with sulfonic acid groups for cumene
hydroperoxide, diffusion control in

Kinetics of dissociation

of cumene hydroperoxide, on sulfonic acid groups immobilized on
polymer supports, diffusion control

Diffusion

reaction kinetics controlled by, in catalyst systems immobilized
on polymer supports

Cation exchangers

sulfonic acid, as catalysts for decompn. of cumene hydroperoxide,
diffusion control in

Cation exchangers

with sulfonic acid groups for cumene hydroperoxide, diffusion
control in

9056-03-5

11113-61-4

11119-67-8

12612-37-2

51609-15-5

54991-00-3

58739-82-5

59233-23-7

74315-51-8

75026-61-8

catalysts, for decompn. of cumene hydroperoxide, diffusion control
in

9037-24-5

catalysts, for decompn. of cumene hydroperoxide, diffusion in
80-15-9

decompn. of, catalyzed by sulfonic acid exchangers,
diffusion-controlled

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102:155471

Structural study of poly(g-mercaptopropylsiloxane)-carbonylrhodium catalyst by XPS [x-ray photoelectron spectroscopy].
Wang, Dianxun; Li, Yongjun; Jiang, Yingyan (Inst. Chem., Acad. Sin., Beijing, Peop. Rep. China). Gaofenzi Tongxun, (4), 318-20 (Chinese) 1984. CODEN: KFTTAR. ISSN: 0453-2880. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

The structure of poly-g-mercaptopropylsiloxanecarbonylrhodium catalyst was studied by XPS. The catalyst is formed by replacing 2 bridged Cl atoms in tetracarbonyl-m-dichlorodirrhodium with 2 S atoms in silica-supported poly-g-mercaptopropylsiloxane.

Keywords

rhodium carbonyl immobilized catalyst

Index Entries

Catalysts and Catalysis

rhodium carbonyl, immobilized on mercaptopropyl-bonded silica

Siloxanes and Silicones, uses and miscellaneous

mercaptopropyl, reaction products with silica, rhodium catalysts

immobilized on

14523-22-9

catalysts prepd. by reaction of, with mercaptopropyl-bonded silica

7440-16-6, uses and miscellaneous

catalysts, immobilized on mercaptopropyl-bonded silica

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101:198794

Aminated polystyrene-bound rhodium cluster catalysts for the water gas shift reaction.

Kaneda, Kiyotomi; Kobayashi, Masaya; Imanaka, Toshinobu;

Teranishi, Shiichiro (Fac. Eng. Sci., Osaka Univ., Osaka 560, Japan).

Chem. Lett., (9), 1483-6 (English) 1984. CODEN: CMLTAG. ISSN:

0366-7022. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,

Reaction Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 35, 38, 51

Various aminated polystyrenes are synthesized by treatment of chloromethylated polystyrene with amines. The aminated polymers are examd. as an insol. support for Rh₆(CO)₁₆ in the water gas shift reaction (WGSR). Diethylenetriamino polymer is the most effective support for the WGSR. This heterogenization does not lower the WGSR activity in homogeneous systems.

Keywords

aminated polystyrene rhodium cluster catalyst

water gas shift catalyst rhodium

Index Entries

Water gas shift reaction catalysts

rhodium cluster, immobilized on aminated polystyrene

7440-16-6, uses and miscellaneous

28407-51-4

catalysts, immobilized on aminated polystyrene for water gas shift reaction

9049-93-8

25232-41-1

catalysts, with immobilized rhodium cluster complexes for water gas shift reaction

9003-53-6, aminated
catalysts, with immobilized rhodium cluster complexes, for water
gas shift reaction

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101:53310

Diffusion and reaction in an immobilized-enzyme starch
saccharification catalyst.

Sirotti, D. A.; Emery, A. H. (Sch. Chem. Eng., Purdue Univ., West
Lafayette, IN 47907, USA). Appl. Biochem. Biotechnol., 9(1), 27-39
(English) 1984. CODEN: ABIBDL. ISSN: 0273-2289. DOCUMENT
TYPE: Journal CA Section: 16 (Fermentation and Bioindustrial
Chemistry)

Effectiveness factors were predicted from measurements of basic
parameters made on single oligosaccharides, and the prediction was
compared to exptl. effectiveness factors from the reaction of each
oligosaccharide in the immobilized enzyme catalyst. Kinetic
parameters were obtained for the hydrolysis of each oligosaccharide
catalyzed by sol. glucomylase [9032-08-0], and were fit with a subsite
model equation capable of generalization to all sizes of
oligosaccharide. Diffusion coeffs. in free soln. were detd. from
movement out of a capillary tube. Spatial characteristics of the
immobilized enzyme bed were obtained from pulse response expts.,
allowing the calcn. of effective diffusivities. Exptl. effectiveness factors
plotted against modulus were in reasonable agreement with the
predictions.

Keywords

immobilized glucoamylase starch saccharification

Index Entries

Saccharification

of starch, with immobilized glucoamylase, diffusion and reaction in
9032-08-0

immobilized, in starch saccharification, diffusion and reaction of
9005-25-8, reactions

saccharification of, with immobilized glucoamylase, diffusion and
reaction in

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101:7674

Polymerization of acrylamide in the presence of gel-immobilized
metal-porphyrin complexes.

Potapov, G. P.; Alieva, M. I. (Syktyvkar. Gos. Univ., Syktyvkar, USSR).
Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol., 26(9), 1122-5
(Russian) 1983. CODEN: IVUKAR. ISSN: 0579-2991. DOCUMENT

TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)
Metal-porphyrin complexes for polymn. catalysts were immobilized by
polymg. the porphyrin complexes (contg. 1 or 2 vinylic side chains) with
acrylamide and N,N-methylenebisacrylamide. During polymn. of
acrylamide in aq. soln. in the presence of H2O2 and an immobilized
porphyrin complex, the activity of the catalyst system depended on the
reaction temp. and on the nature of the metal. Max. monomer
conversion occurred at 40°. Catalysts contg. Ni complexes had the
highest activity and Fe complexes the lowest, with Co complexes
exhibiting intermediate activity.

Keywords

nickel porphyrin catalyst polymn
immobilization cobalt porphyrin polyacrylamide

acrylamide polymn catalyst porphyrin
iron porphyrin catalyst polymn

Index Entries

Polymerization catalysts
redox, immobilized metal-porphyrin complexes-hydrogen
peroxide, for acrylamide
79-06-1, polymers with methylenebisacrylamide and metal porphyrin
vinylic derivs.
110-26-9, polymers with acrylamide and metal porphyrin vinylic derivs.
448-65-7, vinylic derivs., iron complexes, polymers with acrylamide and
methylenebisacrylamide
7439-89-6, complexes with vinylic porphyrin derivs., polymers with
acrylamide and methylenebisacrylamide
7440-02-0, complexes with vinylic porphyrin derivs., polymers with
acrylamide and methylenebisacrylamide
7440-48-4, complexes with vinylic porphyrin derivs., polymers with
acrylamide and methylenebisacrylamide
25034-58-6, reaction products with metal-porphyrin complexes
51745-82-5, metal complexes, vinylic derivs., polymers with acrylamide
and methylenebisacrylamide
catalysts, contg. hydrogen peroxide, for polymn. of acrylamide
7722-84-1, uses and miscellaneous
catalysts, contg. immobilized metal-porphyrin complexes, for
polymn. of acrylamide
9003-05-8
prepn. of, catalysts for

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100:216286

Immobilized catalysts. XI. Structure and properties of catalysts for
polymerization of propylene based on MCl_3 attached to polymer
supports.

Saratovskikh, S. L.; Pomogailo, A. D.; Babkina, O. N.; D'yachkovskii,
F. S. (Otd. Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 25(2),
464-70 (Russian) 1984. CODEN: KNKTA4. ISSN: 0453-8811.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 36

The reaction of $TiCl_3$ and VCl_3 with polymeric support in combined
grinding was studied by diffractometry and IR spectroscopy. The
grinding of the chlorides with polyethylene (PE) or polypropylene (PP)
supports affected insignificantly the structure and catalytic properties (in
propylene polymn.), whereas that with PE or PP having grafted
poly-4-vinylpyridine, polymethyl methacrylate) or polyacrylonitrile affects
the structure (complexing of metal chlorides with functional groups) and
catalytic properties significantly. The activity and stereospecificity of
the catalyst increased simultaneously when shortage of functional
groups was present on the supports.

Keywords

immobilized catalyst polymn
polymeric support titanium vanadium chloride
titanium chloride support complexing catalyst activity
vanadium chloride support complexing catalyst activity
stereoselectivity propylene polymn catalyst

Index Entries

Coordination

complexing of titanium trichloride and vanadium trichloride with
polymeric support having functional groups, catalytic activity

in relation to
Infrared spectra
of titanium trichloride or vanadium trichloride on polymeric support,
catalytic properties in relation to
Polymerization catalysts
stereoselective, titanium trichloride or vanadium trichloride on
polymeric support, for propylene
25511-01-7
25749-02-4
26355-13-5
32534-86-4
graft, reaction of, with titanium or vanadium trichloride, catalytic
activity in polypropylene polymn. in relation to
7705-07-9, reactions
7718-98-1
reaction of, with polymeric support on grinding, catalytic activity in
propylene polymn. in relation to
9002-88-4
9003-07-0
reaction of, with titanium or vanadium trichloride, on grinding,
catalytic activity in propylene polymn. in relation to

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100:156215
Hydrogenation using chitin and chitosan based immobilized metal
catalysts.
Arena, Blaise J. (UOP Inc. , USA). U.S. US 4431836 A 14 Feb 1984,
4 pp. Cont.-in-part of U.S. 4,367,355. (English). (United States of
America). CODEN: USXXAM. CLASS: IC: C07C005-02;
C07C005-03; C07C005-08. NCL: 560105000. APPLICATION: US
82-426016 28 Sep 1982. PRIORITY: US 79-83926 11 Oct 1979; US
81-237030 23 Feb 1981. DOCUMENT TYPE: Patent CA Section: 23
(Aliphatic Compounds)
Alkenes and alkynes were hydrogenated using a Group VIII metal
dispersed on an aminated polysaccharide. Thus, 1-heptene was
hydrogenated at 175° and 700 psig for 1.5 h using a Pt-impregnated
chitin catalyst contg. 0.25 % Pt, to give 36.5 % starting material and
49.6 % heptane.

Keywords

platinum chitin chitosan support hydrogenation
alkene hydrogenation platinum polysaccharide support

Index Entries

Alkenes, reactions
hydrogenation of, chitin or chitosan-supported platinum or
palladium catalysts for
Hydrogenation catalysts
platinum, chitin or chitosan supported, for alkenes
1398-61-4, palladium or platinum impregnated
9012-76-4, palladium impregnated
catalyst, for alkene hydrogenation
7440-06-4, uses and miscellaneous
catalyst, for alkene hydrogenation, on chitin
7440-05-3, uses and miscellaneous
catalyst, for alkene hydrogenation, on chitosan or chitin
592-76-7
hydrogenation of, chitin-supported platinum catalyst for
142-82-5, preparation
prepn. of, by heptene hydrogenation, chitin-supported platinum
catalyst for

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100:91955

Catalytic properties of some site isolated transition metal complexes. Zombeck, A.; Drago, R. S.; Nyberg, E. D. (Sch. Chem. Sci., Univ. Illinois, Urbana, IL 61801, USA). Prepr. - Am. Chem. Soc., Div. Pet. Chem., 27(3), 645-51 (English) 1982. CODEN: ACPCAT. ISSN: 0569-3799. DOCUMENT TYPE: Journal; General Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) A review with emphasis on the authors' work on polymer-supported catalysts. 15 Refs.

Keywords

review polymer immobilized catalyst
transition metal complex catalyst review

Index Entries

Polymers, uses and miscellaneous
catalysts, transition metal complexes immobilized on
Transition metals, compounds
complexes, polymer-immobilized, catalysts
Catalysts and Catalysis
polymer-immobilized transition metal complexes

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99:219387

Vibrational spectroscopy of immobilized cobalt and rhodium carbonyls used to effect the catalytic hydroformylation of propylene. Woo, Seong Ihl (Univ. Wisconsin, Madison, WI, USA). 508 pp. Avail. Univ. Microfilms Int., Order No. DA8315035 From: Diss. Abstr. Int. B 1983, 44(4), 1188 (English) 1983. DOCUMENT TYPE: Dissertation CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 23, 73
Abstract Unavailable

Keywords

hydroformylation catalyst cobalt rhodium carbonyl
propylene hydroformylation cobalt rhodium carbonyl catalyst

Index Entries

Hydroformylation catalysts
cobalt and rhodium carbonyls immobilized on support, vibrational spectroscopy of
7440-16-6, carbonyl compds.
7440-48-4, carbonyl compds.
catalysts, hydroformylation, for propylene, vibrational spectroscopy of immobilized
115-07-1, reactions
hydroformylation of, cobalt and rhodium carbonyl compds. in catalyst for

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99:77530

Supported metal clusters. II. Synthesis and hydroformylation activity of the supported trinuclear cobalt carbonyl cluster. Wang, Yunpu; Wu, Nan; Zhang, Aimin; Fu, Hongxiang; Luo, Yuzhong; Yang, Zhenyu (Northwest Teachers Coll., Lanzhou, Peop. Rep. China). Cuihua Xuebao, 4(2), 154-8 (Chinese) 1983. CODEN: THHPD3. ISSN: 0253-9837. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 45

A catalyst polymer[poly(styrene-divinylbenzene)]-C(O)CCo₃(CO)₉ with an organometallic Co cluster chem. bonded to a macromol. species was synthesized. Its Co content is 2.67%. IR absorption spectra of this catalyst showed that there is a specific band (2050 cm⁻¹) attributed to the end carbonyl as in the case of the complexes YCo₃(CO)₉ (Y=H, Cl, C₆H₅, etc). The catalytic activity of this catalyst for the hydroformylation of 1-heptene was tested at various reaction temps. and pressures; the results indicate that it is more active under mild reaction conditions: the av. turnover yield reaches 95.6% in the first 6 h at 120°, 40 kg/cm² and H₂/CO = 1; the product selectivity of aldehyde-alc. is ~100% and no hydrogenated alkene compds. are obsd. This catalyst can be reused many times, but 6.9% of its Co content is lost after 48 h on stream.

Keywords

cobalt hydroformylation catalyst polymer immobilized
alkene hydroformylation catalyst cobalt

Index Entries

Hydroformylation catalysts

cobalt carbonyl cluster, polymer-immobilized

Cluster compounds

cobalt carbonyl, polymer-immobilized, hydroformylation catalysts

9003-70-7, chloroacetylated, reaction products with cobalt carbonyl

10210-68-1, reaction products with chloroacetylated

divinylbenzene-styrene polymer

catalysts, for hydroformylation

7440-48-4, uses and miscellaneous

catalysts, for hydroformylation, polymer-immobilized

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98:146646

A heme protein-immobilized electrode.

Niki, Katsumi; Yagi, Tatsuhiko; Inokuchi, Hiroo; Nakamura, Asao (Ajinomoto Co., Inc., Japan). Eur. Pat. Appl. EP 68664 A1 5 Jan 1983, 12 pp. DESIGNATED STATES: R: DE, FR, GB. (English). (European Patent Organization). CODEN: EPXXDW. CLASS: IC: H01M004-90; H01M008-16; C25B011-04; C12M001-40. APPLICATION: EP 82-302910 7 Jun 1982. PRIORITY: JP 81-89615 12 Jun 1981.

DOCUMENT TYPE: Patent CA Section: 52 (Electrochemical,

Radiational, and Thermal Energy Technology) Section

cross-reference(s): 7

An O fuel-cell or an enzyme electrode comprising a solid elec. conducting material at least partly coated by a monolayer of cytochrome c₃ [9035-44-3] is useful for the direct redn. of O₂ to H₂O and for the electrolysis of H₂O to produce O and H. Cytochrome c₃ is easily obtained from a Desulfovibrio microorganism. Thus, a graphite electrode (surface area 2 x 2 cm²) was soaked in 10⁻⁷M cytochrome c₃ buffer soln., extd. from Desulfovibrio vulgaris Miyazaki strain, of pH 7 for 0.5 h. O in the buffer satd. with air was reduced by using the electrode. The only redn. product was H₂O and no H₂O₂ was detectable.

Keywords

oxygen redn cytochrome graphite electrode
fuel cell cytochrome oxygen electrode
catalyst electrode cytochrome fuel cell
enzyme electrode cytochrome

Index Entries

Cathodes

fuel-cell, catalytic, cytochrome c3-immobilized, performance of oxygen

7440-57-5, uses and miscellaneous

7782-42-5, uses and miscellaneous

cathodes from immobilized cytochrome c3 on, fuel-cell, performance of oxygen catalytic

9035-44-3

cathodes of immobilized, fuel-cell, performance of oxygen catalytic

7782-44-7, uses and miscellaneous

cathodes, cytochrome c3-immobilized, fuel-cell, performance of catalytic

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98:4817

Heterogeneous catalysis of chain transfer to a monomer in the presence of immobilized cobaltoporphyrin.

Pashchenko, D. I.; Vinogradova, E. K.; Bel'govskii, I. M.; Ponomarev, G. V.; Enikolopyan, N. S. (Inst. Fiz., Moscow, USSR). Dokl. Akad. Nauk SSSR, 265(4), 889-92 [Chem.] (Russian) 1982. CODEN:

DANKAS. ISSN: 0002-3264. DOCUMENT TYPE: Journal CA

Section: 35 (Chemistry of Synthetic High Polymers)

An immobilized, heterogeneous chain-transfer catalyst was prep'd. by treating Spheron [crosslinked poly(b-hydroxyethyl methacrylate)] with epichlorohydrin and hexamethylenediamine, condensing the product with Me₂N:CH₂ group-substituted etioporphyrin, and converting the polymer-bonded porphyrin into a Co complex with Co(OAc)₂. This catalyst in the AIBN-initiated polymn. of Me methacrylate increased by a factor of 2 the time required for reaching the jet effect, and lowered the mol. wt. of poly(Me methacrylate) [9011-14-7] to 22,000, compared to 200,000 in the absence of the Co complex.

Keywords

chain transfer catalyst heterogeneous

cobalt porphyrin complex catalyst

hydroxyethyl methacrylate polymer catalyst

methacrylate polymn chain transfer catalyst

Index Entries

Chain-transfer catalysts

cobalt etioporphyrin complexes, polymer-bound, for polymn.

106-89-8, reaction product with poly(hydroxyethyl methacrylate), hexanediamine and etioporphyrin, cobalt complex

124-09-4, reaction product with poly(hydroxyethyl methacrylate), epichlorohydrin and etioporphyrin, cobalt complex

7440-48-4, complexes with polymer-bound etioporphyrins

25249-16-5, reaction products with epichlorohydrin, hexanediamine and etioporphyrin, cobalt complex

83899-91-6, reaction products with crosslinked poly(hydroxyethyl methacrylate), cobalt complex

catalyst, for chain transfer in polymn.

9011-14-7

prepn. of, chain-transfer catalysts for

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97:183718

Synthesis and study of nickel and vanadium polymer complexes.

Luksha, V. G.; Potapov, G. P.; Koksharova, A. A.; Artemov, A. N.; Gorokhovskaya, L. S. (USSR). Khim. Elementoorg. Soedin., 80-2

(Russian) 1981. CODEN: KELSDE. ISSN: 0201-6699. DOCUMENT
 TYPE: Journal CA Section: 39 (Synthetic Elastomers and Natural
 Rubber) Section cross-reference(s): 25, 67
 Gel-immobilized systems for the catalytic cyclization of alkynes were
 prepd. by graft copolymn. of SKEPT rubber-butadiene rubber blends
 with monomer contg. electron-donor groups, followed by fixation of sol.
 transition metal salts on the modified rubber matrix. The
 cyclotrimerization of phenylacetylene (I) [536-74-3] in the presence of
 gel-immobilized systems in the presence of NaBH₄ activator in an
 appropriate org. solvent at 120-200° gave a mixt. of
 1,3,5-triphenylbenzene (II) [612-71-5] and 1,2,4-triphenylbenzene (III)
 [1165-53-3] in 9.1-72.6% yields. All of the conditions being equal, the
 highest yields of II and III were obtained in PhMe solvent, presumably
 due to swelling in the gel-immobilized systems. The cyclotrimerization
 of I depends on the type of catalysts, with the highest conversion being
 obsd. in the presence of acrylic acid-grafted rubber blend-VO(acac)₂.

Keywords

gel immobilized catalyst cyclization phenylacetylene
 EPDM rubber catalyst support
 butadiene rubber catalyst support
 vinyl grafted rubber catalyst support
 transition metal cyclization catalyst

Index Entries

Ring closure catalysts
 grafted butadiene rubber-EPDM rubber blend-transition metal
 complexes, for phenylacetylene
 Trimerization catalysts
 cyclo-, grafted butadiene rubber-EPDM rubber blend-transition
 metal complexes, for phenylacetylene
 Trimerization
 cyclo-, of phenylacetylene in presence of nickel and vanadium
 complexes, effect of solvent and temp. on
 Rubber, synthetic
 dicyclopentadiene-ethylene-propene, butadiene rubber blends,
 complexes with nickel or vanadium salts, catalysts, for
 cyclization of phenylacetylene
 Rubber, butadiene, uses and miscellaneous
 of 1,2-configuration, EPDM rubber blends, grafted, complexes with
 nickel or vanadium salts, catalysts, for cyclization of
 phenylacetylene
 16940-66-2
 activators, for nickel and vanadium cyclization catalysts
 3153-26-2, complexes with grafted butadiene rubber-EPDM rubber
 blends
 7718-54-9, complexes with grafted butadiene rubber-EPDM rubber
 blends
 13462-88-9, complexes with grafted butadiene rubber-EPDM rubber
 blends
 catalysts, for cyclization of phenylacetylene
 838-85-7, reaction products with rubbers, transition metal complexes
 1611-31-0, reaction products with rubbers, transition metal complexes
 catalysts, for cyclotrimerization of phenylacetylene
 536-74-3
 cyclotrimerization of, catalysts for, nickel or vanadium complexes
 with grafted rubber blends as
 25034-71-3, complexes with nickel or vanadium salts
 55513-73-0, complexes with nickel or vanadium salts
 graft, rubber, butadiene rubber blends, catalysts, for cyclization of
 phenylacetylene
 54116-16-4, complexes with nickel or vanadium salts
 83560-42-3, complexes with nickel or vanadium salts

graft, rubber, catalysts, for cyclization of phenylacetylene
612-71-5
prepn. of, by cyclotrimerization of phenylacetylene, effect of solvent
and catalysts on
1165-53-3
prepn. of, by cyclotrimerization of phenylacetylene, effect of solvent
and catalysts on
25067-26-9
rubber, EPDM rubber blends, catalysts, for cyclization of
phenylacetylene

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97:181677

Hydrocarboxylation of 1-nonene on immobilized palladium catalysts.
Popchenko, M. R.; Manakov, M. N.; Tarasova, T. I. (Mosk.
Khim.-Tekhnol. Inst., Moscow, USSR). Neftepererab. Neftekhim.
(Moscow), (7), 37-9 (Russian) 1982. CODEN: NNNSAF. ISSN:
0028-1190. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic
Compounds)
Ten Pd catalyst systems were examd. for the title reaction. The highest
n-C₉H₁₉CO₂H yield and selectivity were obtained using PdCl₂ on
chlorinated PVC.

Keywords

nonene hydrocarboxylation catalyst
nonanoic acid prep catalyst
carboxylation hydro nonene catalyst
palladium chloride PVC hydrocarboxylation catalyst

Index Entries

Silica gel, uses and miscellaneous
silylated, catalysts, with palladium dichloride, for hydrocarboxylation
of nonene
Carboxylation catalysts
reductive, palladium chloride-chlorinated PVC, for nonene
7647-10-1
catalysts, chlorinated PVC, for hydrocarboxylation of nonene
9002-86-2, chlorinated
9003-47-8
9003-70-7, chloromethylated
9003-70-7, phosphonylated
catalysts, with palladium dichloride, for hydrocarboxylation of
nonene
124-11-8
hydrocarboxylation of, catalyst for
334-48-5
prepn. of, by hydrocarboxylation of nonene, catalysts for

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97:169696

A new catalyst for nitrogen fixation - poly(vinylpyridine)-coordinated
cluster of molybdenum and iron.
Sun, Chunting; Li, Shuqin; Huang, Qijun; Niu, Shuyun (Dep. Chem., Jilin
Univ., Changchun, Peop. Rep. China). Gaodeng Xuexiao Huaxue
Xuebao, 3(3), 398-402 (Chinese) 1982. CODEN: KTHPDM.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms) Section
cross-reference(s): 49
A new catalyst for N fixation was prepd. This catalyst may be regarded
as a cluster of Mo and Fe bonded to a polyvinylpyridine carrier. The
initial rate of acetylene on the new catalyst is 1.3 mol/mol. min and as

high as the same type complex catalyst of dextrin-supported Mo-cysteine. This catalyst is so stable that there is only a little decrease in activity upon repeated use. The relation of catalyst activity to compn. indicates the role of the components of the nitrogenase-active center. These results can help in understanding the mechanism of N fixation.

Keywords

nitrogen fixation catalyst molybdenum iron
polyvinylpyridine molybdenum iron catalyst

Index Entries

Nitrogen fixation catalysts
molybdenum-iron, immobilized on polyvinylpyridine support
9003-47-8
catalysts, contg. molybdenum and iron, for nitrogen fixation
7439-98-7, uses and miscellaneous
catalysts, immobilized on polyvinylpyridine support for nitrogen fixation
7439-89-6, uses and miscellaneous
catalysts, with molybdenum immobilized on polyvinylpyridine support, for nitrogen fixation

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97:12466

Polystyrene-supported ruthenium and osmium cluster carbonyls: synthesis and application in water gas shift reaction.
Bhaduri, Sumit; Khwaja, Hanif; Sharma, Krishna R. (CAFI Site, Alchem. Res. Cent. Private Ltd., Thane 400 601, India). Indian J. Chem., Sect. A, 21A(2), 155-6 (English) 1982. CODEN: IJCADU. ISSN: 0376-4710. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 51
Osmium and Ru cluster carbonyls were anchored on cross-linked polystyrene through metal-C bonds and their catalytic activities for water gas shift reaction were studied.

Keywords

osmium polymer immobilized cluster catalyst
carbonyl ruthenium catalyst polymer immobilized
water gas shift catalyst

Index Entries

Water gas shift reaction catalysts
osmium and ruthenium carbonyl clusters, immobilized on polystyrene-divinylbenzene crosslinked polymer
Cluster compounds
osmium, carbonyls, polystyrene-supported, catalytic activity in water gas shift reaction in relation to
Cluster compounds
ruthenium, carbonyls, polystyrene-divinylbenzene-supported, catalytic activity in water gas shift reaction in relation to
9003-70-7, reaction products with osmium and ruthenium carbonyl clusters
15243-33-1, reaction products with polystyrene-divinylbenzene
15696-40-9, reaction products with polystyrene-divinylbenzene
34438-91-0, reaction products with polystyrene-divinylbenzene
catalytic activity of, in water gas shift reaction

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105:197716

Soluble polymer-bound reagents and catalysts.

Bergbreiter, David E. (Dep. Chem., Texas A and M Univ., College Station, TX 77843, USA). ACS Symp. Ser., 308(Polym. Reagents Catal.), 17-41 (English) 1986. CODEN: ACSMC8. ISSN: 0097-6156.

DOCUMENT TYPE: Journal; General Review CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 22, 35

Synthetic applications of sol. polymer-bound reagents and catalysts are reviewed with 62 refs. Examples show these sol. macromol. reagents have many of the same advantages as insol. polymeric reagents as replacements for conventional low-mol. wt. reagents or catalyst ligands.

The homogeneity of reaction solns. employing such reagents or catalysts is their principal advantage over comparable chem. using an insol. reagent or catalyst derived from a cross-linked polymer.

Keywords

review catalyst polymer immobilized soluble

Index Entries

Polymers, uses and miscellaneous
catalysts and reagents immobilized on
Catalysts and Catalysis
polymer-immobilized sol.
Chemicals
reagents, polymer-immobilized sol.

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105:99499

Olefin metathesis over molybdenum and tungsten catalysts immobilized on inorganic supports.

Guo, Yiping; Liao, Shihtsien; Yu, Daorong; Guo, Hefu (Dalian Inst. Chem. Phys., Acad. Sin., Dalian, Peop. Rep. China). Cuihua Xuebao, 7(2), 177-82 (Chinese) 1986. CODEN: THHPD3. ISSN: 0253-9837.

DOCUMENT TYPE: Journal CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes) Section cross-reference(s): 23

Mo and W components in $\text{Bu}_4\text{N}[\text{Mo}(\text{CO})_5\text{Cl}]$ [32424-52-5]- EtAlCl_2 [563-43-9] and WCl_6 - Bu_4Sn [1461-25-2] catalyst systems were immobilized on inorg. carriers such as SiO_2 , γ - Al_2O_3 , SiO_2 - Al_2O_3 , TiO_2 , NaY zeolites, and activated char, resp. These catalysts were used in the metathesis of 1-hexene [592-41-6]. For the WCl_6 - SiO_2 - Bu_4Sn system supported on SiO_2 , the metathesis yield increased 6 times and the side reactions (isomerization to 2- and 3-hexene) decreased from 15% to 1.5%, compared with the unsupported catalyst. The catalytic activity increased with increasing amt. of surface OH groups and decreased with increasing amt. of surface adsorbed water. This modification of catalyst properties was attributed to the formation of W-O-Si species via immobilization.

Keywords

hexene metathesis catalyst molybdenum tungsten
ethylaluminum chloride metathesis catalyst hexene
tin tetrabutyl metathesis catalyst hexene
silica metathesis catalyst hexene

Index Entries

Double decomposition catalysts
silica-supported molybdenum and tungsten, for hexene
563-43-9, uses and miscellaneous

catalysts, contg. silica-supported molybdenum, for metathesis of hexene

1461-25-2

catalysts, contg. silica-supported tungsten, for metathesis of hexene

7631-86-9, uses and miscellaneous

catalysts, molybdenum and tungsten immobilization on, for metathesis of hexene

13283-01-7

13520-78-0

32424-52-5

catalysts, silica-supported, contg. tin, for metathesis of hexene

592-41-6, uses and miscellaneous

metathesis of, catalysts for

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104:231278

Rhodium(I) complexes bound to silica via bidentate phosphine ligands.

Zbirovsky, V.; Kreuzfeld, H. J.; Capka, M. (Inst. Chem. Process Fundam., Czech. Acad. Sci., Prague 165 02, Czech.). React. Kinet. Catal. Lett., 29(1), 243-8 (English) 1985. CODEN: RKCLAU. ISSN:

0304-4122. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,

Reaction Kinetics, and Inorganic Reaction Mechanisms)

Triethoxysilyl-substituted diphosphines of the novel type

(EtO)₃Si(CH₂)_nP(Ph)CH₂CH₂PPh₂ (n = 1, 3) were prepd. and used to

immobilize Rh(I) complexes on SiO₂. The complexes were effective

catalysts for hydrogenation of 1,3-cyclooctadiene under mild

conditions.

Keywords

hydrogenation catalyst silica immobilized rhodium

phosphine silyl rhodium 1 complex

cyclooctadiene hydrogenation rhodium silica catalyst

Index Entries

Hydrogenation catalysts

rhodium(I) complexes, immobilized on silica by bidentate

phosphine ligands

7631-86-9, reaction products with rhodium(I) triethoxysilyldiphosphine complexes

catalysts

7440-16-6, diphosphine complexes

101515-21-3, rhodium(I) complexes

102525-88-2, rhodium(I) complexes

catalysts from silica and

1700-10-3

hydrogenation of, on rhodium(I) silica-immobilized catalysts

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104:175224

Immobilization of colloidal platinum particles onto polyacrylamide gel having amino groups and their catalyses in hydrogenations of olefins.

Hirai, Hidefumi; Ohtaki, Michitaka; Komiyama, Makoto (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Chem. Lett., (3), 269-72 (English) 1986. CODEN: CMLTAG. ISSN: 0366-7022. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 22

Colloidal Pt dispersions, prepd. by photoredn. of PtCl₄²⁻ ion in the presence of a copolymer of N-vinyl-2-pyrrolidone and acrylamide, are treated with polyacrylamide gel having amino groups, resulting in stable

immobilization of colloidal particles onto the gel. The immobilized catalysts exhibit high activities in hydrogenations of olefins at 30° and 1 atm.

Keywords

platinum colloidal polyacrylamide gel catalyst
hydrogenation catalyst olefin immobilized colloidal platinum

Index Entries

Hydrogenation catalysts
colloidal platinum particles immobilized on polyacrylamide gel,
prepn. of
9003-05-8
catalysts from colloidal platinum immobilized on gel of, contg.
amino groups, prepn. of
26124-23-2
catalysts from platinum colloidal dispersions with, in polyacrylamide
gel, for hydrogenation, prepn. of
7440-06-4, uses and miscellaneous
catalysts from polyacrylamide gel and colloidal, for hydrogenation
of alkenes, prepn. of

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103:110608

Visible light sensitization of platinized titanium dioxide photocatalyst by surface-adsorbed poly(4-vinylpyridine) derivatized with ruthenium tris(bipyridyl) complex.

Nakahira, Takayuki; Graetzel, Michael (Inst. Chim. Phys., Ec. Polytech. Fed. Lausanne, Lausanne CH-1015, Switz.). Makromol. Chem., Rapid Commun., 6(5), 341-7 (English) 1985. CODEN: MCRCD4. ISSN: 0173-2803. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 74

The complex [Ru(bipy)₂[4-(5-bromopentyl)-4'-methyl-2,2'-bipyridine]]Cl₂ was prepd. and reacted with poly(4-vinylpyridine) in DMF at 40°. The modified polymer was then treated with hexadecyl bromide or N-(3-bromopropyl)-N'-hexadecyl-4,4'-bipyridinium dibromide and the product was reacted with excess Me p-tosylate. The photocatalyst was prepd. by photoplatinizing TiO₂ (anatase) powder and dispersing in aq. soln. contg. the polymer sensitizer. Luminescence quenching in this system is attributed to intramol. electron transfer from Ru(bipy)₃²⁺ to viologen moieties. The reverse electron transfer is ~10 times slower than the forward process. H₂ evolution during H₂O photolysis is enhanced and the initial rate is maintained past 50% EDTA depletion. The catalyst particles are well protected against coagulation.

Keywords

polyvinylpyridine adsorbed platinized titania catalyst
photocatalyst ruthenium bipyridine functionalized polysoap
titania platinized water photolysis catalyst
hydrogen generation water photolysis catalyst

Index Entries

Luminescence quenching
of ruthenium bipyridine complex, immobilized on polyvinylpyridine,
intramol. electron transfer in relation to
Photolysis catalysts
platinum-titania, with adsorbed polyvinylpyridine derivatized with
ruthenium bipyridine complex and viologen moieties, for
water splitting

Electron exchange

intramol., of ruthenium bipyridine complex immobilized on
polyvinylpyridine contg. viologen moieties
112-82-3, reaction products with polyvinylpyridine
25232-41-1, reaction products with ruthenium bipyridine complex and
viologen moieties
90910-47-7, reaction products with polyvinylpyridine
122448-72-0, reaction products with polyvinylpyridine
adsorbed, on platinized titania photocatalyst for water splitting
7440-06-4, uses and miscellaneous
catalysts from titania and, with adsorbed polyvinylpyridine
derivatized with ruthenium bipyridine complex and viologen
moieties, for photolysis of water
13463-67-7, uses and miscellaneous
catalysts, platinized, with adsorbed polyvinylpyridine derivatized
with ruthenium bipyridine complex and viologen moieties,
for photolysis of water
7732-18-5, reactions
photolysis of, on platinized titania with adsorbed polyvinylpyridine
derivatized with ruthenium bipyridine complex and viologen
moieties
1333-74-0, preparation
prepn. of, by water splitting on platinized titania photocatalysts

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103:105397

Synthesis of poly(vinylbenzyltriphenylphosphonium)-bound nucleophilic
reagents and their applications for anionic activation in nucleophilic
substitutions.

Hassanein, M.; Akelah, A.; Abdel-Galil, F. (Fac. Sci., Tanta Univ.,
Tanta, Egypt). Eur. Polym. J., 21(5), 475-8 (English) 1985. CODEN:
EUPJAG. ISSN: 0014-3057. DOCUMENT TYPE: Journal CA Section:
35 (Chemistry of Synthetic High Polymers)

Insol. polymer-bound nucleophilic reagents derived from
poly(vinylbenzyltriphenylphosphonium chloride) were prepd. by
treatment with the Na salts of carboxylic acids, PhSO₂H, and phenols.
These reagents were used for the synthesis of carboxylic acid esters
and sulfones and C-O-alkylation of phenols by reaction with alkyl
halides. In addn. to the ease and simplicity of the method and
regeneration of the polymeric byproduct, the polymeric reagent seems
to increase the nucleophilicity of the anions. The products were
obtained in higher yields than those for the corresponding polymeric
phase-transfer catalyst which need long reaction time and gave no
satisfactory yields esp. in non-polar solvents.

Keywords

phase transfer vinylbenzylphosphonium polymer alkylation
esterification phase transfer polymer catalyst
sulfone phase transfer polymer catalyst
nucleophilicity phase transfer polymn catalyst

Index Entries

Sulfones

Ph alkyl, prepn. of, phase-transfer alkylation catalysts for
Substitution reaction catalysts
nucleophilic, phase-transfer, immobilized on
poly(vinylbenzyltriphenylphosphonium chloride)
Alkylation catalysts
Esterification catalysts
phase-transfer, immobilized on
poly(vinylbenzyltriphenylphosphonium chloride)
74-88-4, uses and miscellaneous

75-03-6
 75-30-9
 100-44-7, uses and miscellaneous
 105-39-5
 alkylating agent, for phase-transfer alkylation and esterification
 reactions, polymer-bound catalysts for
 139-02-6
 532-32-1
 538-42-1
 824-78-2
 873-55-2
 875-83-2
 3847-57-2
 alkylation-esterification of, polymer-bound phase-transfer catalysts
 for
 69400-12-0, derivs.
 catalysts, for phase-transfer alkylation and esterification

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102:220504
 Olefinations with a polymer-supported phosphinate.
 Qureshi, Altaf Ellahi; Ford, Warren T. (Dep. Chem., Oklahoma State
 Univ., Stillwater, OK 74078, USA). Br. Polym. J., 16(4), 231-3 (English)
 1984. CODEN: BPOJAB. ISSN: 0007-1641. DOCUMENT TYPE:
 Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed
 Benzenoid Compounds) Section cross-reference(s): 24
 Et 4-polystyryl(ethylphosphino)acetate has been prepd. from 2%
 crosslinked polystyrene. The functionalized polymer is used as a
 catalyst in Wittig olefinations of BzH and cyclic ketones.

Keywords

phosphinate immobilized polystyrene Wittig reaction
 olefination Wittig phosphinate immobilized polystyrene
 benzaldehyde Wittig polystyrene functionalized phosphinate
 cyclopentanone Wittig polystyrene functionalized phosphinate
 cyclohexanone Wittig polystyrene functionalized phosphinate

Index Entries

Wittig reaction catalysts
 Et (ethylphosphino)acetate-functionalized polystyrene, for
 benzaldehyde and cyclic ketones
 9003-70-7
 Et (ethylphosphino)acetate-functionalized, as catalysts, for Wittig
 reaction
 100-52-7, reactions
 108-94-1, reactions
 120-92-3
 Wittig reaction of, with Et (ethylphosphino)acetate-functionalized
 polystyrene catalysts
 644-97-3
 20502-85-6
 polystyrene-immobilized, prepn. and reactions of
 105-36-2
 polystyrene-immobilized, prepn. of, as catalyst for Wittig
 olefination of ketones

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102:219571
 Combined action of an enzyme and metal catalyst on the conversion
 of D-glucose/D-fructose mixtures into D-mannitol.
 Makkee, Michiel; Kieboom, Antonius P. G.; Van Bakkum, Herman

(Lab. Org. Chem., Delft Univ. Technol., Delft 2628 BL, Neth.).
Carbohydr. Res., 138(2), 237-45 (English) 1985. CODEN: CRBRAT.
ISSN: 0008-6215. DOCUMENT TYPE: Journal CA Section: 16
(Fermentation and Bioindustrial Chemistry)

A process involving both a bio- and a chemocatalyst was applied for the conversion of D-glucose [50-99-7]/fructose [57-48-7] mixts. to D-mannitol [69-65-8]. Good yields (62-66%) were obtained by using D-glucose isomerase [9055-00-9] immobilized on silica in combination with a Cu-on-silica catalyst (water, pH ~7, 70°, 50 kg/cm² of H₂, trace amts. of buffer, Mg(II), borate, and EDTA). Nonenzymic isomerization and degradn. reactions are negligible under these reaction conditions.

Keywords

mannitol prodn glucose fructose enzyme copper
glucose conversion mannitol isomerase metal
fructose conversion mannitol isomerase metal

Index Entries

7440-50-8, uses and miscellaneous
catalyst, in fructose and glucose conversion to mannitol
9055-00-9
immobilized, fructose and glucose conversion by, to mannitol,
metal catalysts effect on
50-99-7, biological studies
mannitol manuf. from fructose and, combined enzyme and metal
catalyst in
57-48-7, biological studies
mannitol manuf. from glucose and, combined enzyme and metal
catalyst in
69-65-8
manuf. of, from fructose and glucose, combined enzyme and metal
catalysts in

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102:209980

Cobalt complexes with hematoporphyrin immobilized in silica.
Yatsimirskii, K. B.; Yakubovich, T. N.; Bratushko, Yu. I.; Kotlyar, S. S.;
Yanishpol'skii, V. V.; Tertykh, V. A. (USSR). Dokl. Akad. Nauk SSSR,
280(6), 1382-5 [Chem.] (Russian) 1985. CODEN: DANKAS. ISSN:
0002-3264. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
Reaction Kinetics, and Inorganic Reaction Mechanisms) Section
cross-reference(s): 66
A reaction of hematoporphyrin (I) with an aminoorgano-Aerosil (II) in
DMF and in the presence of dicyclohexylcarbodiimide resulted in
immobilization of I on II. The Co complex of the immobilized I were
prepd. by mixing a suspension of II with Co acetate, both in glacial
AcOH, and heating the mixt. to 60-80° for 1 h. The immobilized
complex is easily oxidized in air and then reduces. This is
accompanied by a change of electronic spectra. The Co³⁺ immobilized
complex does not show an ESR signal at -185° and catalyzes H₂NNH₂
by mol. O.

Keywords

cobalt hematoporphyrin immobilized catalyst prepn
oxidn catalyst cobalt hematoporphyrin hydrazine
spectra cobalt hematoporphyrin fixed silica

Index Entries

Oxidation catalysts
cobalt-hematoporphyrin complex on amino-organo-Aerosil surface,

for hydrazine prepn., reactions and spectra of
 Ultraviolet and visible spectra
 of cobalt-hematoporphyrin fixed on amino-orgo-Aerosil
 14459-29-1
 immobilization of, on aminoorgano Aerosil, in presence of
 dicyclohexylcarbodiimide
 302-01-2, reactions
 7631-86-9, surface complex with cobalt hematoporphyrin and imide
 oxidn. of, cobalt-hematoporphyrin immobilized complex on silica
 as catalysts for
 7440-48-4, hematoporphyrin complex on silica surface
 prepn. of, as catalysts for hydrazine oxidn.
 14459-29-1, cobalt complex on Aerosil surface
 prepn. of, as catalysts for hydrazine oxidn., spectra in
 538-75-0
 reaction of, with silica and hematoporphyrin, surface fixation in

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102:130434

Design of industrial immobilized cell columns. I. Horizontal baffle
 effects on compaction of immobilized cell catalyst beds.

Furui, Masakatsu; Yamashita, Kiyokazu (Dep. Chem. Eng., Tanabe
 Seiyaku Co., Ltd., Osaka 532, Japan). J. Ferment. Technol., 63(1),
 73-8 (English) 1985. CODEN: JFTED8. ISSN: 0385-6380.

DOCUMENT TYPE: Journal CA Section: 16 (Fermentation and
 Bioindustrial Chemistry)

To avoid compaction from the phys. properties of soft immobilized cell
 beds, a column equipped with a horizontal baffle was developed. To
 confirm the baffle effect, the void fraction, pressure drop, and liq. flow
 characteristics of the columns were investigated and compared with
 those of a column without the baffle. The void fraction in the column
 with baffle was little affected by superficial liq. velocity compared with
 the control. The pressure drop was smaller and the liq. flow was closer
 to plug flow in the column with the baffle.

Keywords

microorganism immobilized column horizontal baffle

Index Entries

Escherichia coli

immobilized in packed column, horizontal baffle effects on

Reactors

biocatalytic, packed-column, compaction of, horizontal baffle effect
 on

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101:231308

Polymer supports in synthesis.

Pittman, Charles U., Jr. (Dep. Chem., Mississippi State Univ.,
 Mississippi State, MS, USA). Polym. News, 10(2), 50-1 (English)
 1984. CODEN: PLYNBU. ISSN: 0370-050X. DOCUMENT TYPE:

Journal; General Review CA Section: 37 (Plastics Manufacture and
 Processing) Section cross-reference(s): 7, 21, 22, 67

A review with 3 refs.

Keywords

review polymer support synthesis

enzyme polymer immobilized review

catalyst polymer immobilized enzyme review

Index Entries

Polymer-supported reagents
 immobilized enzymes, in synthesis
 Catalysts and Catalysis
 polymer, in synthesis
 Enzymes
 immobilized, polymer supports for, in synthesis

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101:22775

Epoxidation of olefins with organic hydroperoxides in the presence of immobilized catalysts.

Boeva, R.; Kropf, H.; Kotov, S.; Vasilev, K. (Higher Inst. Chem. Technol., Burgas, Bulg.). Geterog. Katal., 5th, Pt. 1, 63-7 (English) 1983. CODEN: GEKADD. DOCUMENT TYPE: Journal CA Section:

22 (Physical Organic Chemistry)

Kinetics and selectivity of epoxidn. of cyclopentene, cyclohexene, cyclooctene, 2-methyl-2-butene, and of styrene with hydroperoxide in the presence of MoO₂²⁺ or VO₂⁺ immobilized on the chloromethylated copolymer of styrene and divinylbenzene were detd. The immobilized Mo catalyst was the more effective catalyst. The mechanism involved initial interaction of the hydroperoxide with the immobilized catalyst.

Keywords

epoxidn olefin hydroperoxide catalyst
 polymer molybdenum vanadium epoxidn catalyst

Index Entries

Hydroperoxides

epoxidn. by, of olefins, kinetics and mech. of

Alkenes, reactions

epoxidn. of, by org. hydroperoxides in presence of immobilized catalysts, kinetics and mech. of

Kinetics of epoxidation

of alkenes by hydroperoxides, catalytic

Epoxidation

of alkenes by hydroperoxides, mech. of catalytic

Epoxidation catalysts

polymer-bound molybdenum or vanadium, for alkenes

7439-98-7, immobilized on chloromethylated copolymer of styrene and divinylbenzene

7440-62-2, immobilized on chloromethylated copolymer of styrene and divinylbenzene

catalysts, for epoxidn. of alkenes

75-91-2

3071-32-7

epoxidn. by, of alkenes in presence of immobilized catalysts, kinetics and mech. with

100-42-5, reactions

110-83-8, reactions

142-29-0

513-35-9

931-88-4

epoxidn. of, by org. hydroperoxides, kinetics and mech. of catalytic

3153-26-2

17524-05-9

reaction of, with chloromethylated copolymer of styrene and divinylbenzene

9003-70-7, chloromethylated

reaction of, with molybdenum or vanadium oxy acetylacetonates

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99:122984

Study of immobilized catalysts. VII. Effect of water on the activity of cobalt systems - diene polymerization catalysts.

Ivleva, I. N.; Echmaev, S. B.; Golubeva, N. D.; Pomogailo, A. D. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 24(3), 663-6

(Russian) 1983. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT

TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)

The presence of H₂O accelerated the rate of polymn. of butadiene

catalyzed by a homogeneous catalyst CoCl₂.(pyridine)₂-Et₂AlCl

[96-10-6] and, to a lesser extent, a heterogeneous catalyst

CoCl₂.(ethylene-4-vinylpyridine graft copolymer)-Et₂AlCl. Kinetic and

magnetic susceptibility data, and use of the model catalyst

CoCl₂.(ethylene-4-vinylpyridine graft copolymer)-iso-Bu₂AlOAlBu₂

[87086-08-6], indicates that the effect of H₂O cannot be ascribed to low

reducing capacity of aluminoxanes formed from alkylaluminum halides

and H₂O. It was suggested that the effect of H₂O reflects its direct

interaction with active centers of the catalyst.

Keywords

cobalt catalyst diene polymn water

butadiene polymn cobalt catalyst water

water cobalt polymn catalyst activity

Index Entries

Polymerization catalysts

cobalt chloride-pyridine or -vinylpyridine copolymer complex with

diethylaluminum chloride, for polymn. of butadiene, water

effect on activity of

Magnetic susceptibility

of cobalt chloride-pyridine or -vinylpyridine copolymer complex and

diethylaluminum chloride catalysts, for polymn. of

butadiene, water effect on

96-10-6, uses and miscellaneous

catalysts, contg. cobalt chloride-pyridine or -vinylpyridine copolymer

complex and, for polymn. of butadiene, water effect on

activity of

87086-08-6

catalysts, contg. cobalt chloride-vinylpyridine copolymer complex,

for polymn. of butadiene, activity of

7646-79-9, vinylpyridine copolymer complexes

14024-92-1

catalysts, contg. diethylaluminum chloride, for polymn. of butadiene,

water effect on activity of

7732-18-5, uses and miscellaneous

cobalt-aluminum catalyst activity in presence of, in polymn. of

butadiene

26355-13-5, cobalt complexes

graft, catalysts, contg. diethylaluminum chloride, for polymn. of

butadiene, water effect on activity of

9003-17-2

of cis-1,4-configuration, formation of, in presence of

cobalt-aluminum catalysts, water effect on

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99:69962

Preparation and evaluation of ion exchange resin-immobilized

rhodium-phosphine hydroformylation catalysts.

Ford, Michael E.; Premecz, J. E. (Ind. Chem. Technol., Air Prod. and

Chem., Inc., Allentown, PA 18105, USA). J. Mol. Catal., 19(1), 99-112

(English) 1983. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT

TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section
cross-reference(s): 35

Insol. analogs of homogeneous Rh hydroformylation catalysts are obtained by ionic attachment of a functionalized amino phosphine onto an ion exchange resin, and subsequent ligand exchange with a sol. Rh complex. Both acidic and basic ion exchange resins are used for ligand insolubilization. Supported Rh complexes have superior reactivity for hydroformylation of 1-octene, and low losses of Rh by metal leaching. The protonation regiochem. of the amino phosphines was detd. by NMR and IR.

Keywords

polymer anchored rhodium hydroformylation catalyst
octene rhodium hydroformylation catalyst

Index Entries

Hydroformylation catalysts

ion exchange resin immobilized rhodium-phosphine, for octene,
kinetics with

Protonation and Proton transfer reaction

of amino functionalized phosphines, regioselectivity of

Kinetics of hydroformylation

of octene over ion exchange resin immobilized

rhodium-phosphine catalysts

Regiochemistry

of protonation of amino functionalized phosphines

Polymer-supported reagents

rhodium-phosphine hydroformylation catalysts

Ion exchangers

catalysts, as supports for rhodium-phosphine hydroformylation

829-85-6, polystyrene anchored

catalysts, for hydroformylation

1732-72-5, polystyrene anchor

9003-53-6, phosphine anchored

catalysts, for hydroformylation from

739-58-2, rhodium complex anchored on ion exchanger

2129-31-9, rhodium complex anchored on ion exchanger

63370-87-6, rhodium complex anchored on ion exchanger

catalysts, for hydroformylation of octene, kinetics with

7440-16-6, ion exchange anchored complexes with

ammonio phosphine complexes, uses and miscellaneous

hydroformylation catalysts

14523-22-9

hydroformylation catalysts from

111-66-0

hydroformylation of, over ion exchange resin supported catalysts,

kinetics of

2129-31-9

63370-87-6

prepn. and hydroformylation catalysts contg.

739-58-2

prepn. and proton NMR of

121-69-7, properties

603-35-0, properties

739-58-2

1530-32-1

16056-11-4

proton NMR of

9002-23-7

9037-24-5

9049-93-8

51609-15-5

54991-00-3

support, for hydroformylation catalysts

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99:6090

Heterophase polymerization of phenylacetylene on an immobilized catalyst.

Yusupbekov, A. Kh.; Arislanov, S. S.; Ibadullaev, A.; Kuzaev, A. I.; D'yachkovskii, F. S. (Tashk. Politekh. Inst., Tashkent, USSR). Dokl. Akad. Nauk Uzb. SSR, (2), 34-6 (Russian) 1983. CODEN: DANUAO. ISSN: 0366-8614. DOCUMENT TYPE: Journal CA Section: 35

(Chemistry of Synthetic High Polymers)

During polymn. of phenylacetylene (I) [536-74-3] in the presence of MoCl₅ supported on kaolin, talc, Al₂O₃, and MgO, the highest conversion was obtained with kaolin support and the lowest, with Al₂O₃.

The reaction in the presence of supported MoCl₅ was 0.5 order in Mo and 1st order in I, compared to 1.5 and 1st order, resp., in the presence of unsupported MoCl₅. The polymers obtained in presence of supported MoCl₅ had bimodal mol. wt. distribution and an amorphous structure.

Keywords

phenylacetylene polymn catalyst
molybdenum chloride polymn catalyst support
kaolin support molybdenum chloride catalyst

Index Entries

Polymerization catalysts

molybdenum pentachloride, for phenylacetylene, supports for

Kinetics of polymerization

of phenylacetylene, in presence of supported molybdenum

pentachloride

Kaolin, uses and miscellaneous

support, for molybdenum pentachloride catalysts, for polymn. of phenylacetylene

10241-05-1

catalysts, for polymn. of phenylacetylene, supports for

536-74-3

polymn. of, in presence of supported molybdenum pentachloride

catalysts, kinetics of

25038-69-1

prepn. of, in presence of supported molybdenum pentachloride

catalysts, kinetics of

1309-48-4, uses and miscellaneous

14807-96-6, uses and miscellaneous

support, for molybdenum pentachloride catalysts, for polymn. of phenylacetylene

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99:4348

Isomerization of glucose to fructose. 2. Optimization of reaction conditions in the production of high fructose syrup by isomerization of glucose catalyzed by a whole cell immobilized glucose isomerase catalyst.

Straatsma, J.; Vellenga, K.; De Wilt, H. G. J.; Joosten, G. E. H. (Chem. Eng. Dep., Groningen 9747 AG, Neth.). Ind. Eng. Chem. Process Des. Dev., 22(3), 356-61 (English) 1983. CODEN: IEPDAW. ISSN: 0019-7882. DOCUMENT TYPE: Journal CA Section: 17 (Food and

Feed Chemistry)

The results of previous studies were used to calc. the economically optimal reaction conditions in the prodn. of high-fructose syrup by isomerization over an immobilized catalyst in a packed bed reactor.

The optimum pH of the feed is 7.65. The sensitivity of the total operation costs for small variations in the pH (0.1 pH unit) is small. The temp. should preferably be 50-5°, or as close as possible to this range while avoiding microbiol. growth in the system. The catalyst particles should be so small that their effectiveness factor is unity. If unity cannot be reached for practical reasons, the particles should be as small as the pressure drop over the reactor allows.

Keywords

optimization fructose syrup glucose isomerase

Index Entries

Process optimization
of fructose syrup manuf. with immobilized glucose isomerase
Syrups
fructose-high, manuf. with immobilized glucose isomerase,
optimization of
9055-00-9
immobilized, fructose syrup manuf. with, optimization of

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98:132910

Chemistry of hexaammineruthenium(III) in zeolites. 2. Interaction with carbon monoxide.

Verdonck, Jos J.; Schoonheydt, Robert A.; Jacobs, Peter A. (Cent. Oppervlaktescheikd. Colloidale Scheikd., Kathol. Univ. Leuven, Louvain B-3030, Belg.). J. Phys. Chem., 87(4), 683-9 (English) 1983.

CODEN: JPCHAX. ISSN: 0022-3654. DOCUMENT TYPE: Journal

CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 66

(NH₃)₆Ru(III) complexes in X- and Y-type zeolites were thermally activated in CO and/or H₂O atms. The activation was followed by volumetric and gas chromatog. techniques and by in-situ IR and UV-visible spectroscopy. At <400 K, a (NH₃)₅CORu(II) complex is formed upon activation of (NH₃)₆Ru(III) in CO. At higher activation temps. in CO, the major species is a (CO)₃Ru(I) complex, while in H₂O, a (CO)₂Ru(I) complex dominates. In Y zeolites both species are always present simultaneously, while in X zeolites they can be better isolated. The results agree with the previously reported low-temp. H₂O-gas shift activity over these samples.

Keywords

water gas shift catalyst ruthenium
zeolite ruthenium ammine catalyst activation
carbon monoxide reaction ruthenium ammine
IR ruthenium ammine carbonyl zeolite

Index Entries

Zeolites, properties
IR spectra of ruthenium ammine-carbonyl complexes immobilized on
Water gas shift reaction catalysts
ruthenium ammine-carbonyl complexes, immobilized on zeolites
Ammines
ruthenium, catalysts, for water-gas shift reaction
31418-66-3
38331-41-8
formation of, in zeolites
18943-33-4
reaction of zeolite-bound, with carbon monoxide or water vapor

630-08-0, reactions
7732-18-5, vapor
reaction of, with ruthenium(III) ammine complexes immobilized on zeolites

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98:89652

Silacrown ethers and their use as phase-transfer catalysts.
Arkles, Barry C. (Petrarch Systems, Inc., USA). U.S. US 4362884 A 7
Dec 1982, 5 pp. (English). (United States of America). CODEN:
USXXAM. CLASS: IC: C07F007-08; C07F007-18. NCL: 556446000.
APPLICATION: US 81-323629 23 Nov 1981. DOCUMENT TYPE:
Patent CA Section: 29 (Organometallic and Organometalloidal
Compounds) Section cross-reference(s): 67

Five silacrown ethers I [R, R1 = (un)satd. alkyl, alkoxy, aryl, H; n = 4-10)
were prepd. from polyethylene glycols. E.g., equimolar amts. of
CH₂:CHSiMe(OEt)₂ and H(OCH₂CH₂)₄OH were stirred at 50-60° with
Ti(Obu)₄ for 16 h, then distd. to give vinylmethylsila-14-crown-5.
Dimethylsila-17-crown-6 catalyzed the substitution of PhCH₂Br with KX
(X = cyano, OAc, F) to give 55-100% PhCH₂X.
Methoxymethylsila-17-crown-6, immobilized on controlled-pore glass,
also functioned as a phase-transfer catalyst for KCN substitution with
allyl bromide, PhCH₂Br and PhCH₂Cl.

Keywords

silacrown ether phase transfer catalyst
polyethylene glycol reaction silane
immobilized catalyst silacrown ether substitution

Index Entries

Glass, oxide
controlled-pore, immobilization of silacrown ether catalysts by
Substitution reaction catalysts
nucleophilic, phase-transfer, silacrown ethers
546-68-9
catalyst, for transesterification of pentaethylene glycol with
vinylmethyldiethoxysilane
5593-70-4
catalyst, for transesterification of vinylmethyldiethoxysilane with
tetraethylene glycol
100-39-0
nucleophilic substitution reactions of, with potassium cyanide,
acetate, or fluoride, silacrown ether catalysts for
83890-22-6
83890-23-7
83890-25-9
83890-26-0
prepn. and phase-transfer catalytic activity of
83890-24-8
prepn. of
109-75-1
4786-20-3
prepn. of, by reaction of allyl bromide with potassium cyanide,
silacrown ether catalysts for
140-11-4
prepn. of, by reaction of benzyl bromide with potassium acetate,
silacrown ether catalysts for
350-50-5
prepn. of, by reaction of benzyl bromide with potassium fluoride,
silacrown ether catalysts for
140-29-4

prepn. of, by reaction of benzyl halide and potassium cyanide,
silacrown ether catalysts for
2243-27-8
prepn. of, by reaction of potassium cyanide with octyl bromide,
silacrown ether catalysts for
127-08-2
7789-23-3
substitution reaction of, with benzyl bromide, silacrown ether
catalysts for
100-44-7, reactions
106-95-6, reactions
111-83-1
substitution reaction of, with potassium cyanide, silacrown ether
catalysts for
151-50-8
substitution reactions of, with alkyl halides, silacrown ether catalysts
for
1112-39-6
transesterification of, with polyethylene glycols
5507-44-8
transesterification of, with tetra- and pentaethylene glycol
112-60-7
4792-15-8
transesterification of, with vinylmethyldiethoxysilane

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98:56857

Hydrogenation of coal-derived liquids in the presence of rhodium
complexes.

Rajca, Irena W.; Abalayeva, Velentina V.; Borowski, Andrzej F. (Dep.
Pet. Coal Chem., Polish Acad. Sci., Gliwice 44-100, Pol.). Fuel,
61(12), 1292-4 (English) 1982. CODEN: FUELAC. ISSN: 0016-2361.

DOCUMENT TYPE: Journal CA Section: 51 (Fossil Fuels, Derivatives,
and Related Products) Section cross-reference(s): 67

Hydrogenation of distillate (b. 473-573 K) derived from catalytic
hydrogenation of coal in the presence of H-donor solvents, and in addn.
to EtOH and DMF exts. of the tar from low-temp. (fluidized-bed) coal
carbonization, have been investigated in the presence of Rh
complexes. The complexes, (293-393 K; 0.1-5 MPa) both in
homogeneous and immobilized on ion-exchange resins are catalytically
active in hydrogenation of these coal-derived liqs. However, the
increase of H-C at. ratio is low. The immobilized catalysts are not
deactivated in several catalytic cycles.

Keywords

coal liq hydrogenation rhodium catalyst
distillate coal hydrogenation rhodium catalyst
immobilized rhodium coal hydrogenation catalyst

Index Entries

Hydrogenation catalysts
rhodium complexes, for coal liqs.
Coal liquids
distillates, hydrogenation of, rhodium complexes as catalyst for
87-88-7, rhodium complexes
91-40-7, rhodium complexes
95-45-4, rhodium complexes
118-92-3, rhodium complexes
7440-16-6, complexes
7440-44-0, activated, rhodium complexes
9074-22-0, rhodium complexes
13725-33-2

37311-41-4, rhodium complexes
hydrogenation catalysts, for coal distillates

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98:40009

Enzymic removal of hazardous pollutants from industrial aqueous effluents.

Klibanov, A. M. (Dep. Nutr. Food Sci., Massachusetts Inst. Technol., Cambridge, MA, USA). Enzyme Eng., 6, 319-24 (English) 1982.

CODEN: ENENDT. ISSN: 0094-8500. DOCUMENT TYPE: Journal;
General Review CA Section: 60 (Waste Treatment and Disposal)
A review with 4 refs.

Keywords

review enzymic wastewater treatment org
enzymic detritiation wastewater treatment review

Index Entries

Wastewater treatment
detritiation, immobilized hydrogenase as catalyst for
Enzymes
in wastewater treatment, for org. removal and detritiation
Phenols, uses and miscellaneous
removal of, from wastewater, peroxidase in
Amines, uses and miscellaneous
arom., removal of, from wastewater, peroxidase in
Amines, uses and miscellaneous
aryl, removal of, from wastewater, peroxidase in
Wastewater treatment
biol., detritiation catalyzed by immobilized hydrogenase in
Wastewater treatment
biol., enzymic removal of arom. amines and phenols from industrial effluents in
9003-99-0
horseradish, in arom. amine and phenol removal from wastewater
9035-82-9, hydrogen
immobilized, in detritiation of contaminated water
10028-17-8, uses and miscellaneous
removal of, from wastewater, from nuclear plants, immobilized
hydrogenase in

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97:161871

Immobilized complex catalysts.

Imanaka, Toshinobu; Kaneda, Kiyotomi (Fac. Eng. Sci., Osaka Univ., Osaka, Japan). Kagaku Sosetsu, 34, 176-89 (Japanese) 1982.

CODEN: KGSOBF. DOCUMENT TYPE: Journal; General Review CA
Section: 22 (Physical Organic Chemistry)
A review with 127 refs.

Keywords

review immobilized complex catalyst

Index Entries

Catalysts and Catalysis
immobilized
Coordination compounds
immobilized complexes, catalysts

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96:158246

Immobilized penicillin V acylase. Development of an industrial catalyst.

Gestrelus, Stina (Res. Inst., NOVO, Bagsvaerd DK-2280, Den.). Appl. Biochem. Biotechnol., 7(1-2), 19-21 (English) 1982. CODEN: ABIBDL.

ISSN: 0273-2289. DOCUMENT TYPE: Journal CA Section: 7

(Enzymes)

The development and properties of Novozym 217 are described. It is an immobilized non-thiol-contg. fungal penicillin V acylase. It has a moderate product inhibition and a broad pH activity-stability profile, making it possible to produce 6 aminopenicillanic acid continuously from penicillin V in a series of packed bed reactors with intermediary pH regulation.

Keywords

aminopenicillanate immobilized penicillin V acylase

Index Entries

9014-06-6

immobilized

551-16-6

manuf. of, with immobilized penicillin V acylase

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96:41542

Activity and stability of poly(g-diphenylphosphinopropylsiloxane-platinum) complex as hydrogenation catalyst for alkenes.

Zhou, Yanzhu; Jiang, Yingyan (Inst. Chem., Acad. Sin., Shanghai, Peop. Rep. China). Cuihua Xuebao, 2(3), 233-5 (Chinese) 1981. CODEN:

THHPD3. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 23

SiO₂-supported poly-g-diphenylphosphinopropylsiloxane-Pt complex was prep'd. from hydrous chloroplatinic acid and SiO₂-supported poly-g-diphenylphosphinopropylsiloxane. This catalyst is highly active and selective for the hydrogenation of alkenes at room temp. and atm. hydrogen pressure. In addn., this polymer catalyst is very stable and can be reused 30 times without any appreciable loss in catalytic activity.

Keywords

hydrogenation catalyst alkene platinum

siloxane phosphinopropyl platinum immobilized catalyst

Index Entries

Alkenes, reactions

hydrogenation of, on platinum catalysts immobilized on silica by phenylphosphinopropylsiloxane

Siloxanes and Silicones, uses and miscellaneous

phenylphosphinopropyl, platinum complexes, hydrogenation catalysts

Hydrogenation catalysts

platinum, as silica-supported polydiphenylphosphinopropylsiloxane complex, for alkenes

7440-06-4, uses and miscellaneous

catalysts, silica-supported polydiphenylphosphinopropylsiloxane complex as, for hydrogenation of alkenes

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96:3217

Catalysis in peptide chemistry.

Coleman, Daniel Raymond (Ohio State Univ., Columbus, OH, USA).

84 pp. Avail. Univ. Microfilms Int., Order No. 8115092 From: Diss.

Abstr. Int. B 1981, 42(4), 1428 (English) 1981. DOCUMENT TYPE:

Dissertation CA Section: 9 (Biochemical Methods) Section

cross-reference(s): 34

Abstract Unavailable

Keywords

immobilized carboxypeptidase Y peptide synthesis

palladium catalyst peptide synthesis

Index Entries

Peptides, preparation

carboxypeptidase Y immobilized deriv. and palladium catalyst in

9046-67-7

immobilized, in peptide synthesis

7440-05-3, catalyst

in peptide synthesis

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105:110803

Production and use of immobilized enzymes and cells.

Sazci, Ali; Acan, Leyla (Temel Bilimler Arastirma Enst., TUBITAK,

Gebze-Kocaeli, Turk.). Doga: Biyol. Ser., 10(1), 121-6 (Turkish) 1986.

CODEN: DBSEEC. DOCUMENT TYPE: Journal; General Review CA

Section: 7 (Enzymes) Section cross-reference(s): 9, 16

A review with 19 refs. on the immobilization of enzymes and cells and the advantages of the immobilized derivs. for chem. catalysis and their industrial applications.

Keywords

review immobilization cell enzyme application

catalyst immobilized cell enzyme review

Index Entries

Cell

Enzymes

immobilization and application to chem. catalysis and industry

Reactors

biocatalytic, immobilized cells and enzymes in

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105:32835

After-effect of light in the photocatalytic oxidation of isobutene on immobilized vanadium oxide catalysts.

Kashuba, E. V.; Lyashenko, L. V.; Belousov, V. M. (Inst. Phys. Chem.,

Kiev 252028, USSR). React. Kinet. Catal. Lett., 30(1), 137-41

(English) 1986. CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT

TYPE: Journal CA Section: 74 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

A photocatalytic after-effect of visible and UV light in isobutene oxidn. to Me₂CO on immobilized vanadium oxide catalysts was established. It is ascribed to the formation of labile active sites from coordinatively unsatd. V(V) compds. upon irradiation.

Keywords

photocatalytic oxidn isobutene vanadium oxide

Index Entries

Oxidation catalysts

photochem., vanadium oxide, for isobutene oxidn. to acetone,
after-effects of visible and UV light on
11099-11-9

catalyst, photocatalytic after-effect of visible and UV light in
isobutene oxidn. to acetone on

67-64-1, preparation

formation of, in photocatalytic oxidn. of isobutene on vanadium
oxide catalyst, after-effect of visible and UV light in
115-11-7, reactions

photocatalytic oxidn. of, on immobilized vanadium oxide catalysts,
after-effect of light on

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104:231276

The role of substrate transport in catalyst activity.

Ekerdt, John G. (Dep. Chem. Eng., Univ. Texas, Austin, TX 78712,
USA). ACS Symp. Ser., 308 (Polym. Reagents Catal.), 68-83 (English)
1986. CODEN: ACSMC8. ISSN: 0097-6156. DOCUMENT TYPE:

Journal; General Review CA Section: 67 (Catalysis, Reaction Kinetics,
and Inorganic Reaction Mechanisms)

A review of the general subject of substrate transport in
polymer-immobilized catalyst systems. The equations needed to
interpret reaction rate data for polymer systems are developed and
their applicability is discussed. The effects of exptl. variables on obsd.
reaction rates in the presence of substrate transport limitations are
discussed. 41 Refs.

Keywords

review substrate transport catalyst activity modeling

Index Entries

Process simulation, physicochemical

of substrate transport in polymer-immobilized catalysts

Catalysts and Catalysis

polymer-immobilized, substrate transport in, math. modeling of

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104:225288

Study of immobilized catalysts. XVIII. Magnetic susceptibility of
products from conversion of nickel catalysts for dimerization of
olefins in strong fields.

Echmaev, S. B.; Ivleva, I. N.; Golubeva, N. D.; Pomogailo, A. D.;
Borod'ko, Yu. G. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet.
Katal., 27(2), 394-9 (Russian) 1986. CODEN: KNKTA4. ISSN:

0453-8811. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of
Synthetic High Polymers) Section cross-reference(s): 67, 77

The magnetic susceptibility was studied of grafted catalysts, composed
of Ni(AcO)₂.H₂O on surface of poly(acrylic acid)-grafted on polyethylene
support, at 4.2-300 K and 0-70 kOe. The distribution of different-state
Ni (according to the magnetic susceptibility) was detd. The $\approx 10 \text{ \AA}$
large Ni clusters with ferromagnetic exchange were obsd. The sp.
catalytic activity as function of Ni²⁺ concn. exhibit a relation with the
function of cluster-size distribution. The catalyst was tested in

dimerization of C₂H₄.

Keywords

nickel grafted polymer catalyst magnetic susceptibility
catalyst nickel polyacrylic acid polyethylene support
dimerization ethylene catalyst nickel cluster

Index Entries

Dimerization catalysts
nickel on grafted copolymer surface, for ethylene, cluster formation
and magnetic susceptibility of
Distribution function
of energy states of nickel catalysts supported on grafted copolymer,
magnetic susceptibility in relation to
Magnetic susceptibility
surface, of nickel catalysts on grafted copolymer, nickel energy
state distribution in relation to
9010-77-9
catalysts from nickel supported on, cluster formation on surface of,
activity in ethylene dimerization in relation to
373-02-4
catalysts precursor, on grafted copolymer, magnetic susceptibility
of catalysts prep. from
7440-02-0, uses and miscellaneous
catalysts, on grafted copolymer, for ethylene dimerization, magnetic
susceptibility of
74-85-1, reactions
dimerization of, nickel grafted copolymer-supported catalysts for,
magnetic susceptibility of

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104:185923

Oligomerization of butadiene in the presence of metal compounds
immobilized on polymeric carriers. 1. Iron complexes
immobilized in the bulk of a polymer gel in the linear dimerization
of butadiene.

Potapov, G. P.; Punegov, V. V.; Dzhemilev, U. M. (Syktyvkar. Gos.
Univ., Syktyvkar, USSR). Izv. Akad. Nauk SSSR, Ser. Khim., (7),
1468-71 (Russian) 1985. CODEN: IASKA6. ISSN: 0002-3353.

DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds)

Fe[CH(COMe)₂]₃-Et₃Al (1:4) immobilized on a SKEPT gel contg.

P(OR)₂ (R = Bu, n-C₈H₁₇, C₉H₅Cl₂, CMe₃) groups catalyzed the linear
oligomerization of butadiene, the activities decreasing in the stated
order of R. The major product was CH₂:CHCHMe(CH:CH)₂H in all
cases, with 4-vinylcyclohexene, H(CH:CH)₂CH₂CH₂CH:CH₂,
1,5-cyclooctadiene, 1,5,9-cyclododecatriene and/or linear trimers
being formed in lesser yields.

Keywords

iron catalyst polymer bound oligomerization
butadiene oligomerization polymer bound catalyst

Index Entries

Polymer-supported reagents
iron complexes, catalysts, for oligomerization of butadiene
Dimerization catalysts
polymer-iron complexes, for butadiene
Rubber, synthetic
dicyclopentadiene-ethylene-propene, contg. phosphite groups,
complexed with iron, catalysts, for oligomerization of

butadiene

Polymerization catalysts

oligomerization, polymer-supported iron complexes, for butadiene

102-85-2, polymer-bound

3028-88-4, polymer-bound

15205-62-6

26604-52-4, polymer-bound

catalysts, with ferric tris(acetylacetonate) and triethylaluminum, for oligomerization of butadiene

97-93-8, uses and miscellaneous

catalysts, with iron tris(acetylacetonate) and polymer-supported phosphite, for oligomerization of butadiene

14024-18-1

catalysts, with polymer-supported phosphite and triethylaluminum, for oligomerization of butadiene

106-99-0, reactions

oligomerization of, catalysts for

100-40-3

111-78-4

925-52-0

1002-35-3

4904-61-4

16422-75-6

prepn. of, by oligomerization of butadiene, catalysts for

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103:110584

Activity sequence of molybdenum(II) structures chemically attached on silicon dioxide in the catalytic hydrogenation of ethene and 1,3-butadiene.

Iwasawa, Yasuhiro; Ito, Nobuhiro; Chiba, Tadahiro; Ishii, Hitoshi;

Kuroda, Haruo (Fac. Sci., Univ. Tokyo, Tokyo 113, Japan). Chem.

Lett., (8), 1141-4 (English) 1985. CODEN: CMLTAG. ISSN:

0366-7022. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,

Reaction Kinetics, and Inorganic Reaction Mechanisms)

The catalytic activities of well-characterized SiO₂-attached Mo(II) monomer, Mo(II) dimer, and Mo(II) cluster catalysts in the hydrogenation of ethene at 200 K and 1,3-butadiene at 273 K were studied to find a structural property of active sites controlling the catalysis in combination with EXAFS studies. The hydrogenation activity markedly depends on the sepn. (bond distance) and assembly of surface Mo atoms; the activity decreases in the following order: dimer MoII-MoII (Mo-Mo = 0.280 nm) » MoII > MoII-MoII (0.253 nm) » tetramer [MoII]₄ (0.279 nm) > impregnation Mo catalyst (reduced) » MoIV catalyst ~ MoVI catalyst (inactive).

Keywords

hydrogenation catalyst immobilized molybdenum complex

Index Entries

Hydrogenation catalysts

molybdenum(II) silica-bonded surface complexes

Bond length

molybdenum-molybdenum, in surface-bonded complexes on silica,

hydrogenation catalytic activity in relation to

7439-98-7, uses and miscellaneous

catalyst, for hydrogenation, immobilized on silica surface

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102:84983

Study of immobilized catalysts. X. Synthesis and catalytic properties

of p-nitrochlorobenzene hydrogenation complexes of palladium on polymer carriers.

Pomogailo, A. D.; Klyuev, M. V. (USSR). Deposited Doc., VINITI 414-84, 14 pp. Avail. VINITI (Russian) 1984. DOCUMENT TYPE: Report CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Pd(II) was fixed on polymeric support by a reaction of $\text{PdCl}_2(\text{PhCN})_2$ with suspension of polyethylene grafted on polyvinylcarbazole polymer in C_6H_6 at 293-300 K on vigorous mixing for 30-60 min. The mechanism of the fixing is discussed. The catalytic activity was studied in hydrogenation of p-nitrochlorobenzene.

Keywords

hydrogenation catalyst palladium fixation polymer

Index Entries

Hydrogenation catalysts

palladium on polymeric support, fixing of, mechanism of
26615-93-0

graft, reaction of, with palladium complex, hydrogenation catalyst formation by
100-00-5

hydrogenation of, by fixed palladium catalysts on polymeric substrate
14220-64-5

reaction of, with grafted polyethylene on polyvinylcarbazole, hydrogenation catalyst formation by

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102:46324

Copolymerization of acrylamide and bisdiazonium salts in an aqueous medium.

Potapov, G. P.; Alieva, M. I.; Fedorova, E. I.; Mitusov, A. A. (Syktyvkar. Gos. Univ., Syktyvkar, USSR). Vysokomol. Soedin., Ser. B, 26(11), 819-21 (Russian) 1984. CODEN: VYSBAI. ISSN: 0507-5483.

DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)

4,4'-Biphenylbis(diazonium chloride) [3019-12-3] and 1-hydroxy-2,4-benzenebis(diazonium chloride) [94289-46-0] were copolymerized with acrylamide (I) [79-06-1] in aq. medium in the presence of Cu(I)-porphyrin complex (II) immobilized on polyacrylamide gel to give colored copolymers sol. in HOAc and H_2O and thermally stable to $\sim 220^\circ$. The copolymerization probably occurred via decomposition of the bis(diazonium) salts and formation of aryl radicals capable of initiating the polymerization of I. The copolymers contained no inseparable Cu compounds. The concentration of II influenced both copolymer yield and molecular weight, with the molecular weight decreasing with increasing II concentration. II probably participates both in diazonium salt decomposition and polymerization initiation and in chain transfer.

Keywords

bisdiazonium salt polymerization acrylamide
diazonium salt polymerization acrylamide
copper porphyrin polymerization catalyst

Index Entries

Polymerization catalysts

copper-porphyrin complex, on polyacrylamide gel, for acrylamide with bis(diazonium) salts
Kinetics of polymerization

of acrylamide with bis(diazonium) salts, in presence of
copper-porphyrin complex
Polymerization
of acrylamide with bis(diazonium) salts, in presence of
copper-porphyrin complex, mechanism of
Diazonium compounds
bis-, copolymn. of, with acrylamide in presence of copper-porphyrin
complex
101-60-0, derivs., copper complexes
7440-50-8, porphyrin complexes
catalysts, immobilized on polyacrylamide gel, for polymn. of
bis(diazonium) salts with acrylamide
3019-12-3
94289-46-0
polymn. of, with acrylamide, in presence of immobilized
copper-porphyrin complex, kinetics and mechanism of
79-06-1, reactions
polymn. of, with bis(diazonium) salts, in presence of immobilized
copper-porphyrin complex, kinetics and mechanism of
94289-45-9
94289-47-1
prepn. and properties of

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101:109951

Studies on triphase catalysis: effects of structure of the immobilized
quaternary salt on the catalytic activity.

Takeuchi, Hirofumi; Miwa, Yoshihisa; Morita, Shushi; Okada, Jutaro
(Fac. Pharm. Sci., Kyoto Univ., Kyoto 606, Japan). Chem. Pharm.

Bull., 32(3), 823-31 (English) 1984. CODEN: CPBTAL. ISSN:

0009-2363. DOCUMENT TYPE: Journal CA Section: 22 (Physical
Organic Chemistry)

The catalytic activities of 8 different types of triphase catalyst
(immobilized phase transfer catalyst) were examd. in the displacement
reaction of several anions with PhBr and n-octyl methanesulfonate (I) at
70 and 90°, resp. The catalysts were prepd. by the reaction of 1%
cross-linked chloromethylated polystyrene with R₃N (R = Et, Pr, Bu),
RNMe₂ (R = Et, Bu, n-dodecyl, n-hexadecyl), or Bu₃P. The catalytic
activity for the reaction of I increased with increasing size of the
immobilized quaternary cation. The catalysts derived from Bu₃P or
Bu₃N increased with increasing size of the immobilized quaternary
cation. The catalysts showed almost the same catalytic activity in every
reaction tested. Variation of the structure of the immobilized cation
modified the catalytic activity not only by changing the anion-cation
interaction energy but also by changing the reaction environment
around the active site.

Keywords

quaternary ammonium triphase catalyst
kinetics substitution benzyl bromide
octyl mesylate substitution phase transfer

Index Entries

Kinetics of substitution reaction
of benzyl bromide or octyl mesylate with anions in presence of
phase-transfer catalyst
Quaternary ammonium compounds, uses and miscellaneous
polymer supported, substitution reaction catalysts, for octyl
mesylate or benzyl bromide, kinetics with
Polymer-supported reagents
quaternary ammonium salts, as substitution reaction catalysts for
anions with benzyl bromide or octyl mesylate

Substitution reaction catalysts
 triphase-transfer, for reactions of anions with octyl mesylate or
 benzyl bromide, kinetics with
 102-69-2
 102-82-9
 112-18-5
 112-69-6
 121-44-8, uses and miscellaneous
 598-56-1, reaction product from, and chloromethylated
 styrene-divinylbenzene copolymer
 927-62-8
 998-40-3
 9003-70-7, chloromethylated, reaction products with tertiary amines or
 phosphines
 phase-transfer catalyst, for substitution reaction of anions with
 benzyl bromide or octyl mesylate, kinetics with
 100-39-0
 16156-52-8
 reaction of, with anions, kinetics of catalytic
 127-08-2
 151-50-8
 reaction of, with benzyl bromide, kinetics of catalytic
 7447-40-7, reactions
 7681-11-0, reactions
 substitution reaction of, with benzyl bromide or octyl mesylate,
 kinetics of catalytic
 7758-02-3, reactions
 substitution reaction of, with octyl mesylate, kinetics of catalytic

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100:155884
 Alumina-catalyzed organic reactions.
 Posner, G. H.; Runquist, A. W.; Chapdelaine, M. J.; Babiak, K. A.;
 Gurria, G. M.; Ellis, J.; Ponton, J.; Oda, M.; Miura, K.; et al. (Dep.
 Chem., Johns Hopkins Univ., Baltimore, MD 21218, USA). Prepr. -
 Am. Chem. Soc., Div. Pet. Chem., 27(3), 661-7 (English) 1982.
 CODEN: ACPCAT. ISSN: 0569-3799. DOCUMENT TYPE: Journal;
 General Review CA Section: 22 (Physical Organic Chemistry)
 The use of reagents immobilized on solid alumina is reviewed with 12
 refs.

Keywords

review heterogeneous catalyst alumina
 immobilized homogeneous catalyst review

Index Entries

Catalysts and Catalysis
 immobilized homogeneous, on alumina
 1344-28-1, preparation
 immobilization of reagents on, reaction mechanisms with

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99:165673
 Modified glassy carbon electrode with immobilized enzyme.
 NAD/NADH lactic dehydrogenase.
 Laval, J. M.; Bourdillon, C. (Lab. Technol. Enzym., Univ. Technol.
 Compiègne, Compiègne 60206, Fr.). J. Electroanal. Chem. Interfacial
 Electrochem., 152(1-2), 125-41 (English) 1983. CODEN: JEIEBC.
 ISSN: 0022-0728. DOCUMENT TYPE: Journal CA Section: 72
 (Electrochemistry) Section cross-reference(s): 7, 67, 79
 The immobilization of a proteic catalyst on to an electrode makes

possible a kinetic coupling between the enzymic catalysis and the electrochem. reaction. Even if, in general, enzymes themselves are unable to transfer electrons directly from the electrode, use can be made of the electrochem. regeneration of the cofactor (NAD in this case) to benefit from the high specificity of the enzymic catalysis. The system studied is lactate dehydrogenase (rabbit skeletal muscle) covalently linked to a rotating glassy C disk. The oxidn. current of NADH at a fixed potential, with the aid of a simple model of heterogenous catalysis, allowed a study of the quant. behavior of the bound enzyme. The potential of local cofactor regeneration is demonstrated by supplying NADH and lactate to the electroenzymic surface.

Keywords

carbon electrode enzyme modified glassy
NAD NADH catalyst glassy carbon

Index Entries

Electrodes

carbon, modified with immobilized enzymes

Catalysts and Catalysis

electrochem., NAD/NADH lactic dehydrogenase, on glassy carbon

electrodes

53-84-9

58-68-4

catalysts, on glassy carbon electrodes

7440-44-0, uses and miscellaneous

electrodes, modified with immobilized enzyme

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98:8406

Complexes and cations supported on the surface and between the layers of zirconium phosphate. 1. Copper(II) and its ammonia complexes.

Clearfield, Abraham; Quayle, Laura R. (Dep. Chem., Texas A & M Univ., College Station, TX 77843, USA). Inorg. Chem., 21(12), 4197-204 (English) 1982. CODEN: INOCAJ. ISSN: 0020-1669.

DOCUMENT TYPE: Journal CA Section: 66 (Surface Chemistry and Colloids) Section cross-reference(s): 67, 77

The nature of the Cu(II)-aquo and -ammine complexes which form on the surface of the layered inorg. ion exchanger α -Zr(HPO₄)₂·H₂O was examd. by ESR and UV-visible reflectance spectra. At low surface coverage, the ESR spectra of both the highly cryst. and semicryst. exchangers are mainly due to isolated Cu(H₂O)₆²⁺. However, resonances due to nonlinear pairs and species that yield reversed g parameters ($g^{\perp} > g^{\parallel}$) are also obsd. As the loading increases, the concn. of nonlinear pairs increases proportionately until finally at ~20% coverage only this species is obtained. The Cu complexes are octahedral with tetragonal distortion. In the amorphous form of the exchanger the Cu(II) species are free to tumble like in aq. soln. When the protons are exchanged out with Na⁺, nonlinear Cu(II) pairs are not obsd. even at ~25% coverage of the surface by Cu(II). On dehydration, diffusion of Cu ions into the interior takes place with an accompanying change of symmetry to trigonal. Sorption of NH₃ by Cu(II) on hydrated phosphate results in formation of [Cu(NH₃)₅H₂O]²⁺. However, in the dehydrated state the tetraamine complex forms. Explanations for the obsd. behavior are given on the basis of the known structure of the host lattice. The ion-exchange method of catalyst immobilization on layered compds. is discussed.

Keywords

copper exchanged immobilized catalyst ESR
 ammine copper exchanged zirconium phosphate
 layered compd immobilized catalyst
 zirconium phosphate copper exchanged ESR

Index Entries

Catalysts and Catalysis
 copper complex-exchanged zirconium phosphates, ESR study of
 Electron spin resonance
 of copper complexes, in zirconium phosphate cation exchanges
 Cation exchange
 of copper complexes, with zirconium phosphate exchangers
 7440-50-8, properties
 ESR of zirconium phosphate cation exchangers contg.
 14946-74-8
 28998-54-1
 ESR of, in zirconium phosphate cation exchanger
 13933-56-7
 cation exchanger, contg. copper, ESR of

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96:149885
 Diffusional influences on deactivation rates: experimental verification.
 Krishnaswamy, S.; Kittrell, J. R. (Dep. Chem. Eng., Univ.
 Massachusetts, Amherst, MA 01003, USA). AIChE J., 28(2), 273-8
 (English) 1982. CODEN: AICEAC. ISSN: 0001-1541. DOCUMENT
 TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and
 Inorganic Reaction Mechanisms) Section cross-reference(s): 7
 The internal diffusion-deactivation model of Krishnaswamy and Kittrell
 (1981) is tested and verified by using lab. deactivation data on the
 decompn. of H₂O₂ by immobilized catalase. Through an anal. of the
 influence of diffusional phenomena on the deactivation kinetics, ests. of
 the intrinsic deactivation rate const. have also been provided.

Keywords

diffusion internal deactivation kinetics catalyst
 hydrogen peroxide decompn immobilized catalase

Index Entries

Dissociation catalysts
 catalase, for hydrogenation peroxide
 Catalysts and Catalysis
 deactivation kinetics of, diffusion effects on
 Kinetics, reaction
 deactivation, in catalysts, diffusion effects on
 Diffusion
 internal, in catalysts deactivation
 Kinetics of dissociation
 of hydrogen peroxide, on immobilized catalase
 9001-05-2
 catalysts, for decompn. of hydrogen peroxide
 7722-84-1, reactions
 decompn. of, on immobilized catalase

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96:122983
 The detection and characterization of surface immobilized phosphine
 ligands and transition metal catalysts by high-resolution
 phosphorus-31 solid state NMR using magic angle spinning
 techniques.

Bemi, L.; Clark, H. C.; Davies, J. A.; Drexler, D.; Fyfe, C. A.; Wasylishen, R. (Guelph-Waterloo Cent. Grad. Work Chem., Univ. Guelph, Guelph, ON N1G 2W1, Can.). J. Organomet. Chem., 224(1), C5-C9 (English) 1982. CODEN: JORCAI. ISSN: 0022-328X.

DOCUMENT TYPE: Journal CA Section: 29 (Organometallic and Organometalloidal Compounds)

High-power proton decoupling, cross-polarization and magic angle spinning techniques have been used to obtain high resoln. ^{31}P NMR spectra of solid cis-[PtCl₂(PR₃)₂] [PR₃ = PPh₂Me, PPh₂(CH₂)₂Si(OEt)₃ (I)] complexes. Solid-state effects result in nonequiv. ^{31}P shieldings within a single solid sample and the magnitude of scalar couplings are comparable to those obtained in soln. Reaction of I with silica or glass surfaces yielded an immobilized complex whose geometry was detd. by these methods. The utility of various preparative routes to phosphine-linked immobilized transition metal complexes on silica and glass surfaces have been evaluated.

Keywords

NMR phosphorus phosphineplatinum complex
platinum phosphine complex NMR
catalyst immobilized complex NMR

Index Entries

Catalysts and Catalysis
immobilized platinum-phosphine complexes, phosphorus-31 NMR
of
Nuclear magnetic resonance
of phosphorus-31, in phosphineplatinum complexes
Glass, oxide
beads, immobilization of platinum-phosphine catalysts by,
characterization by phosphorus-31 NMR
16633-72-0
79919-60-1
phosphorus-31 NMR of

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96:92496

Use of immobilized transition metal complex catalysts in local separated reaction.

Haberland, Detlef; Moeller, Enno; Pscheidl, Helmut (Ger. Dem. Rep.). Ger. (East) DD 147914 Y 29 Apr 1981, 7 pp. Addn. to E. Ger. 138,153. (German). (German Democratic Republic). CODEN: GEXXA8.

CLASS: IC: B01J031-24. APPLICATION: DD 79-213939 27 Jun 1979. PRIORITY: DD 78-207166 8 Aug 1978. DOCUMENT TYPE:

Patent CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

A method is described for detg. the activities, changes in activities, and the selectivities of homogeneous soln. transition metal catalysts by immobilizing the transition metal complexes on solid supports. The immobilized catalysts can be studied in a gas chromatog. microreactor system.

Keywords

transition metal catalyst homogeneous characterization
immobilized transition metal catalyst activity

Index Entries

Transition metals, uses and miscellaneous
catalysts, immobilization method for study of homogeneous
Catalysts and Catalysis

transition metal, immobilization method for study of homogeneous

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96:75197

Metal-complex catalysts coordination-fixed on inorganic supports using organosilicon compounds. 1. Some principles of the synthesis of modified inorganic supports.

Vdovin, V. M.; Fedorov, V. E.; Pritula, N. A.; Fedorova, G. K. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, USSR). Izv. Akad. Nauk SSSR, Ser. Khim., (12), 2663-8 (Russian) 1981. CODEN: IASKA6. ISSN: 0002-3353. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Methods are described for modifying inorg. supports (silica gels) to obtain organosilyl-modified surfaces with nearly identical binding site densities for electron donor (diphenylphosphine) groups. These silicas can be used to prep. a series of immobilized metal complex catalysts with contrasting properties.

Keywords

metal complex silica immobilized catalyst
organosilyl modified catalyst support

Index Entries

Silica gel, uses and miscellaneous
catalyst supports of organosilyl-modified, for immobilization of metal complexes

Functional groups
diphenylphosphine, on organosilyl-modified silicas for
immobilization of metal complex catalysts
Catalysts and Catalysis
supports, organosilyl-modified silicas for

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105:227375

Study of immobilized catalysts. XXI. Synthesis and structure of titanium-magnesium catalysts on polymeric supports.

Bochkin, A. M.; Pomogailo, A. D.; D'yachkovskii, F. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 27(4), 914-19 (Russian) 1986. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal

CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 67

Ethylene graft copolymers with organometallic coatings were used as supports for Mg-Ti catalysts. The formation of isolated Ti(III) ions, the content of which was 55% of the fixed Ti (depending on the prepn. conditions and type of polymer support) was proven by EPR. The dependence of the EPR signals of Ti(III) on the prepn. conditions suggested the incorporation of fragments of the polymer support in the coordination sphere of Ti(III) at low Ti(III) concn. in the Mg-Ti catalyst and Ti(III) layer build-up at high concn. The presence of 40-75-Å crystallites in the active phase was proven by X-ray diffraction. A correlation was established between the activity of polymer-supported Mg-Ti catalysts in C₂H₄ polymn. and the content of isolated Ti(III) ions in the catalysts.

Keywords

titanium magnesium catalyst polymer support
ethylene polymn magnesium titanium catalyst

Index Entries

Polymerization catalysts

polymer-supported magnesium-titanium, for ethylene

7550-45-0, uses and miscellaneous

catalysts, contg. Bu magnesium chloride, on polymer supports, for ethylene polymn.

693-04-9

catalysts, contg. titanium tetrachloride, on polymer supports, for ethylene polymn.

9010-77-9

25155-49-1

28550-69-8

28550-72-3

graft, supports for magnesium-titanium catalysts, in ethylene polymn.

9002-88-4

prepn. of, polymer-supported magnesium-titanium catalysts for

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105:60383

Immobilized b-cyclodextrin catalyst for selective synthesis of 4-hydroxybenzoic acid.

Komiyama, Makoto; Sugiura, Izuru; Hirai, Hidefumi (Fac. Eng., Univ. Tokyo, Hongo 113, Japan). Polym. J. (Tokyo), 17(11), 1225-7

(English) 1985. CODEN: POLJB8. ISSN: 0032-3896. DOCUMENT

TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

4-HOC₆H₄CO₂H (I) was prepd. with 100% selectivity and 89% yield by treating PhOH with CCl₄ in 20% NaOH in the presence of Cu and the reaction product of b-cyclodextrin with 3.3 mol epichlorohydrin as catalyst. Without the catalyst the selectivity was 56% and 15% of I was obtained.

Keywords

hydroxybenzoic acid isomer

phenol carbon tetrachloride cyclodextrin catalyst

benzoic acid hydroxy isomer

Index Entries

7585-39-9, reaction product with epichlorohydrin

catalysts in prepn. of 4-hydroxybenzoic acid

108-95-2, reactions

reaction of, with carbon tetrachloride in presence of b-cyclodextrin deriv.

56-23-5, reactions

reaction of, with phenol in presence of b-cyclodextrin catalysts

99-96-7, uses and miscellaneous

selective synthesis of, in presence of b-cyclodextrin catalysts

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105:43322

Enzyme-catalyzed irreversible formation of peptides containing D-amino acids.

West, J. Blair; Wong, Chi Huey (Dep. Chem., Texas A and M Univ., College Station, TX 77843, USA). J. Org. Chem., 51(14), 2728-35

(English) 1986. CODEN: JOCEAH. ISSN: 0022-3263. DOCUMENT

TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins)

Section cross-reference(s): 7

Dipeptides Z-Tyr-X-OMe (Z = PhCH₂O₂C; X = D-Met, D-Ser, D-Phe,

D-Arg, D-Leu, D-Val) were prepd. by the a-chymotrypsin-catalyzed

coupling of Z-Tyr-OMe with H-X-OMe. Z-Phe-X-OMe (X = D-Met, D-Ala)

and Z-Phe-D-Val-NH₂ were prepd. similarly. The a-chymotrypsin can be

used as the sol. or immobilized form. The formation of each of these peptides in miscible or immiscible org. solvent-water systems in a kinetically controlled approach is virtually irreversible with no side reactions or racemization. Kinetic studies indicate that D-amino acid esters are about 100 times as reactive as water and 10% as effective as L-amino acid esters as a nucleophile in deacylation reactions. The effects of pH, org. solvents, temp., and substrate and enzyme concns. on the yield and the stability of the enzyme in syntheses have been studied and the results were compared with those in the enzyme-catalyzed formation of L-L-dipeptides.

Keywords

chymotrypsin catalyst irreversible peptide synthesis

Index Entries

Kinetics, enzymic

of chymotrypsin, for irreversible peptide coupling reactions of

D-amino acid esters

Solvent effect

on irreversible chymotrypsin-catalyzed peptide coupling reactions

of D-amino acid esters

Peptides, preparation

prepn. of, by irreversible chymotrypsin-catalyzed coupling reactions

of D-amino acid esters

Amino acids, reactions

D-, peptide coupling reactions of, chymotrypsin catalysis of

501-53-1

benzyloxycarbonylation by, of tyrosine Me ester

3417-91-2

benzyloxycarbonylation of

35909-92-3

peptide coupling of, chymotrypsin catalysis of

21705-13-5

32526-16-2

peptide coupling of, with protected phenylalanine Me ester,

chymotrypsin catalysis of

2577-94-8

4070-48-8

21685-47-2

21685-51-8

21691-49-6

23032-21-5

24184-43-8

65160-70-5

peptide coupling of, with protected tyrosine Me ester, chymotrypsin

catalysis of

26340-89-6

69630-60-0

peptide coupling of, with tyrosine deriv.

13512-31-7

prepn. and chymotrypsin-catalyzed peptide coupling reaction of

1164-16-5

prepn. and peptide coupling reaction of

2466-87-7

28944-94-7

102683-26-1

102683-27-2

102683-28-3

102683-29-4

102683-30-7

102683-31-8

102683-32-9

102696-53-7

102696-54-8

prepn. of, by chymotrypsin-catalyzed coupling reactions

9004-07-3

sol. or immobilized, catalyst, for peptide coupling reaction of
D-amino acid esters

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105:12851

Preparation and identification of copper(II) phthalocyanine grafted on
an oxide support.

Borisova, T. G.; Izmailova, L. N.; Kotov, E. I.; Romanovskii, B. V. (Mosk.
Gos. Univ., Moscow, USSR). Zh. Fiz. Khim., 60(5), 1195-8 (Russian)
1986. CODEN: ZFKHA9. ISSN: 0044-4537. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms)

A method is described for immobilizing Cu(II) phthalocyanine on SiO₂
gel or zeolite Y. Diffuse reflection or ESR spectra showed that surface
assembly of the complex from Cu(II) and phthalocyanine is sufficiently
selective for formation of the complex on the support.

Keywords

copper phthalocyanine oxide support catalyst

Index Entries

Catalysts and Catalysis

copper(II) phthalocyanine, immobilized on oxide support

574-93-6, copper(II) complexes

7440-50-8, phthalocyanine complexes

catalysts, immobilized on oxide support

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104:224522

Active center formation in nickel gel-immobilized catalytic systems for
dimerization of the lower olefins.

Kabanov, V. A.; Grishin, G. A.; Martynova, M. A.; Prudnikov, A. I.;
Rozenberg, L. M. (Inst. Neftekhim. Sint. im. Topchieva, Moscow,
USSR). Kinet. Katal., 26(6), 1427-32 (Russian) 1985. CODEN:
KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section:

23 (Aliphatic Compounds)

The title catalytic systems were prepd. from a crosslinked graft
copolymer of ethylene-propylene with poly(4-vinylpyridine), a Ni
complex or salt, and an organoaluminum compd. The catalysts were
active in the dimerization of ethylene and propylene. Activation of the
catalysts involved loss of hydration H₂O and ligand exchange between
Ni and Al. Activation was accelerated in chlorinated hydrocarbons.

Keywords

dimerization olefin nickel polymer catalyst

Index Entries

Dimerization catalysts

nickel complexes with ethene-propene-vinylpyridine graft

copolymer, for ethene and propene

Polymer-supported reagents

nickel gel-immobilized catalytic systems for dimerization of olefins

96-10-6, uses and miscellaneous

97-93-8, uses and miscellaneous

100-99-2, uses and miscellaneous

563-43-9, uses and miscellaneous

1779-25-5
 1888-87-5
 7446-70-0, uses and miscellaneous
 catalysts from nickel-polymer complexes and, for dimerization of
 olefins
 373-02-4, reaction products with ethene-propene-vinylpyridine graft
 copolymer
 553-71-9, reaction products with ethene-propene-vinylpyridine graft
 copolymer
 3264-82-2, reaction products with ethene-propene-vinylpyridine graft
 copolymer
 7718-54-9, reaction products with ethene-propene-vinylpyridine graft
 copolymer
 12012-90-7, reaction products with ethene-propene-vinylpyridine graft
 copolymer
 13138-45-9, reaction products with ethene-propene-vinylpyridine graft
 copolymer
 catalysts from organoaluminum compds. and, for dimerization of
 olefins
 28433-99-0
 graft, catalysts from nickel compds. and, for dimerization of olefins

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104:33815
 Selective synthesis of 4-hydroxybenzoic acid using immobilized
 cyclodextrin.
 Komiyama, M.; Sugiura, I.; Hirai, H. (Fac. Eng., Univ. Tokyo, Tokyo 113,
 Japan). J. Inclusion Phenom., 2(3-4), 823-7 (English) 1984. CODEN:
 JOIPDF. DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its
 Derivatives, and Condensed Benzenoid Compounds)
 b-Cyclodextrin immobilized with epichlorohydrin was used for the
 selective syntheses of 4-hydroxybenzoic acids from phenols and CCl₄
 in aq. NaOH. The selectivities were 100%, and the yields were >80
 mol %. The immobilized catalysts were easily sepd. from the reaction
 mixt., and were repeatedly used without measurable decrease in the
 catalytic activity.

Keywords

phenol carboxylation catalyst
 cyclodextrin hydroxypropylated carboxylation phenol
 benzoic acid hydroxy
 carbon tetrachloride phenol catalyst
 regiochem phenol carboxylation cyclodextrin

Index Entries

Phenols, reactions
 carboxylation of, on hydroxypropylated cyclodextrins
 Carboxylation catalysts
 hydroxypropylated cyclodextrins, for phenols
 Regiochemistry
 of reaction of phenols with carbon tetrachloride on
 hydroxypropylated cyclodextrins
 7585-39-9, hydroxypropylated
 10016-20-3, hydroxypropylated
 prepn. and carboxylation of phenols on
 95-48-7, reactions
 108-95-2, reactions
 reaction of, with carbon tetrachloride on hydroxypropylated
 cyclodextrin
 7585-39-9
 10016-20-3
 reaction of, with epichlorohydrin

56-23-5, reactions
 reaction of, with phenols on hydroxypropylated cyclodextrins
 99-96-7, preparation
 3006-96-0
 selective prepn. of, hydroxypropylated cyclodextrin catalysts for

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103:201532

NMR study of the structure and molecular mobility of metal complexes immobilized on the surface of polymeric supports.

Nazarova, I. I.; Golubeva, N. D.; Bravaya, N. M.; Pomogailo, A. D.; Baturin, S. M. (Inst. Khim. Fiz., Chernogolovka, USSR). Sovrem. Metody YaMR EPR Khim. Tverd. Tela, [Mater. Vses. Koord. Soveshch.], 4th, 102-4. Akad. Nauk SSSR, Inst. Khim. Fiz.: Chernogolovka, USSR. (Russian) 1985. CODEN: 54ONAW.

DOCUMENT TYPE: Conference CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section
 cross-reference(s): 77

The catalysts having Cu²⁺, V⁴⁺, and Ni²⁺ fixed on a polymeric support (I) (polyethylene with grafted polyacrylic acid) were investigated by NMR at 60 and 90°. The low-temp. (<40°) effect of the paramagnetic ions on spin-lattice relaxation of I disappears at 70-90°. This and the published (A.D. Pomohailo et al., 1982) deactivation of C₂H₄-polymn. on fixed metal-polymer catalysts at >90° is explained by increased mobility of the fixed centers.

Keywords

NMR transition metal polymer fixed catalyst
 mobility metal ion fixed polymer NMR
 spin lattice relaxation catalytic activity

Index Entries

Transition metals, uses and miscellaneous
 catalysts, on grafted polymers, surface stability in, NMR in study of
 Catalysts and Catalysis
 transition metal ions fixed on polymer, mobility of, NMR study of
 Diffusion
 surface, of transition metal ion complexes on polymer, in fixed
 catalyst, NMR study of
 9010-77-9
 catalysts from transition metal ions fixed on grafted, NMR study of
 7440-02-0, uses and miscellaneous
 7440-50-8, uses and miscellaneous
 7440-62-2, uses and miscellaneous
 catalysts, on grafted polymers, surface stability in, NMR in study of

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103:180864

Fuels from biomass. I. Synthetic gasoline via catalytic conversion of ethyl alcohol obtained by immobilized cell processes.

Musca, Gavril; Pop, Grigore; Giurca, Radu; Niculescu, Stelian; Ivanescu, Doina; Bragarea, Stefan (ICECHIM, Bucharest, Rom.). Rev. Chim. (Bucharest), 36(7), 589-93 (Romanian) 1985. CODEN:

RCBUAU. DOCUMENT TYPE: Journal CA Section: 52
 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 45, 51, 67

The bioconversion of directly fermentable sugars from biomass to EtOH [64-17-5] with viable immobilized yeast cells as well as the catalytic conversion of EtOH to gasoline are presented. The bioconversion system detcs. the redn. of the process duration from 48 h (required by traditional batch systems of fermn.) to 3-4 h, the net

conversion reaching 95-98% of the max. theor. value. Conversion of EtOH to olefins and arom. hydrocarbons is carried out with zeolites from the mordenite class with yields of >95% and high selectivities. The energy balance of biomass to EtOH (8-10%) conversion, obtained by the process with immobilized yeast cells, is favored by the use of the heat resulting from the exothermal conversion process, at preconcs. of 80% EtOH required, and by the special properties of the catalyst.

Keywords

ethanol zeolite catalyst conversion gasoline
biomass ethanol gasoline manuf

Index Entries

Gasoline
manuf. of, by catalytic conversion of ethanol in immobilized-cell processes
Zeolites, uses and miscellaneous
mordenite-type, catalysts, in conversion of ethanol to gasoline
64-17-5, uses and miscellaneous
gasoline synthesis from, by catalytic conversion

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103:129727

Palladium/polyethylenimine catalysts.

Royer, G. P.; Chow, Wenshiung; Hatton, Kimi S. (Dep. Biochem., Ohio State Univ., Columbus, OH 43210, USA). J. Mol. Catal., 31(1), 1-13 (English) 1985. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT

TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 22, 45, 80

The prepn. and evaluation of Pd catalysts made from polyethylenimine (PEI)/SiO₂ composites are described. The PEI was adsorbed to either porous SiO₂ beads or SiO₂ gel. Following crosslinking, the material was leached with base to increase the surface area and availability of the polymer. The PEI/SiO₂ rapidly chelates Pd²⁺ from soln. Redn. of the chelated metal ions can be accomplished with NaBH₄. The Pd/PEI/SiO₂ beads are used effectively in suspension with formic acid as the H donor; deprotection of Cbz-Glycine-O-tert-Bu (where Cbz = carbobenzoxy) is very rapid with this catalyst compared to Pd on C. The Pd/PEI/SiO₂ gel catalyst can be used effectively with H gas for the redn. of PhNO₂ in MeOH. Both catalysts are conveniently sepd. from product by simply decanting the supernatant soln. The catalysts (1% Pd) have shown no pyrophoric behavior and they are reusable. The introduction of apolar groups into a hydrophobic deriv. of the catalyst matrix did not result in a more effective catalyst compared to the unmodified material.

Keywords

hydrogenation catalyst palladium polymer immobilized
polyethylenimine palladium silica composite catalyst

Index Entries

Hydrogenation catalysts
palladium-polyethylenimine-silica composite, prepn. and properties of selective
7440-05-3, uses and miscellaneous
catalysts, composite, with polyethylenimine and silica for selective hydrogenation
9002-98-6
catalysts, with palladium and silica for hydrogenation

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103:5728

Phase-transfer catalytic activity of polymer-supported macrocyclic polyethers.

Montanari, Fernando; Quici, Silvio; Anelli, Pier Lucio (Ist. Chim. Ind., Univ. Milan, Milan 20133, Italy). Br. Polym. J., 16(4), 212-18 (English) 1984. CODEN: BPOJAB. ISSN: 0007-1641. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 28

Polystyrene-supported 18-crown-6 catalysts (4.5-62% ring substitution) were obtained by reaction of 1% crosslinked chloromethylated polystyrenes with I ($n = 1$ or 9 , $R = H$). Similarly, II ($n = 1$ or 9 , $X = OH$) were prep'd. and linked to afford the polymer-bound [2.2.2]cryptands (3-6% ring substitution). Condensation of II ($n = 1$ or 10 , $X = NH_2$) with carboxylated 1% crosslinked polystyrene gave the immobilized polymers (5-20% ring substitution). Phase-transfer catalytic activity of polymer-supported crown ethers and cryptands has been tested in anion-promoted nucleophilic aliph. substitutions, and compared with that of polymer-supported phosphonium salts. Catalytic activity of crown ethers strongly depends on the combination of 3 parameters: the nature of the nucleophile, the percent ring substitution, and the presence of a spacer chain. Catalytic activity of cryptands is higher than that of crown ethers and quaternary salts with similar percent ring substitution. It is much less dependent on the nature of the anions and on the presence of a spacer chain. As for the related quaternary salts, phase-transfer reactions promoted by polymer-supported crown ethers and cryptands follow a mechanism identical with that obs'd. for sol. catalysts. The reactions occur in the org. shell surrounding a complexed ligand; anions are exchanged at the water-org. solvent interface, and the exchange does not require a concomitant transfer of cationic counterparts. The polymer-immobilized crown ethers and sol. model comp'ds. [e.g., phosphonium salts and I ($n = 9$, $R = CH_2Ph$)] were tested for activity in complexation of cations and in catalytic activity in anion displacements.

Keywords

polystyrene bound phase transfer catalyst
crown ether polystyrene immobilized
cryptand phase transfer polystyrene immobilized

Index Entries

Crown compounds

Cryptates

polymer-supported, prepn. and reactions of

Substitution reaction catalysts

nucleophilic, homogeneous and polymer-supported phase-transfer reagents

151-50-8

333-20-0

7681-11-0, uses and miscellaneous

7758-02-3, uses and miscellaneous

17341-24-1, uses and miscellaneous

17341-25-2, uses and miscellaneous

18459-37-5, uses and miscellaneous

24203-36-9, uses and miscellaneous

complexation of, phase-transfer catalysts for

998-40-3, reaction products with chloromethylated polystyrene

7530-97-4, amides with aminomethylated polystyrene

14937-45-2

70069-04-4, reaction products with chloromethylated polystyrene

75507-25-4, reaction products with chloromethylated polystyrene
 75507-26-5, reaction products with chloromethylated polystyrene
 76377-04-3
 88106-63-2, reaction products with chloromethylated polystyrene
 88106-64-3
 96625-79-5, reaction products with chloromethylated polystyrene
 96625-80-8, reaction products with chloromethylated polystyrene
 96625-81-9, reaction products with chloromethylated polystyrene
 96834-77-4, reaction products with chloromethylated polystyrene
 phase-transfer catalysts
 9003-53-6, aminomethylated or chloromethylated or carboxylated,
 reaction products with functionalized phase-transfer catalysts
 prepn. and reactions of
 111-83-1
 16156-52-8
 substitution reaction of, phase-transfer catalysts for

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102:120631

Solid alkylaluminum-based isomerization catalysts. Surface acidity and catalytic activity.

Haegh, Gerd S.; Riis, Trygve (Cent. Inst. Ind. Res., Oslo, Norway).
 React. Kinet. Catal. Lett., 26(3-4), 343-6 (English) 1984. CODEN:
 RKCLAU. ISSN: 0304-4122. DOCUMENT TYPE: Journal CA

Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Isomerization catalysts for xylene with high activity and selectivity were prepd. by chem. anchoring of EtAlCl₂ on the surface of inorg. oxides. Surface activity was studied by calorimetric and IR spectroscopy methods, and was found to correspond well with catalytic activity for m-xylene isomerization.

Keywords

xylene isomerization catalyst surface acidity
 aluminum alkyl anchored isomerization catalyst

Index Entries

Isomerization catalysts

alkyl aluminum immobilized on inorg. oxide surfaces, for xylenes

1344-28-1, uses and miscellaneous

7631-86-9, uses and miscellaneous

catalysts, alkyl aluminum-bonded, for isomerization of xylenes

563-43-9, uses and miscellaneous

catalysts, inorg. oxide-anchored, for isomerization of xylenes

108-38-3, reactions

isomerization of, alkyl aluminum-inorg. oxide catalysts for

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102:96065

Optimization of enzyme catalyzed peptide synthesis in a "water - water-immiscible organic solvent" biphasic system.

Khmel'nitskii, Yu. L.; Pham Huu Dien; Semenov, A. N.; Martinek, Karel; Veruovic, B.; Kubanek, V. (Dep. Chem., Moscow State Univ., Moscow 117 234, USSR). Tetrahedron, 40(21), 4425-32 (English) 1984.

CODEN: TETRAB. ISSN: 0040-4020. DOCUMENT TYPE: Journal

CA Section: 34 (Amino Acids, Peptides, and Proteins) Section

cross-reference(s): 7

The synthesis of Ac-Trp-Leu-NH₂ was carried out in AcOEt-H₂O mixts. using both free and immobilized α-chymotrypsin as catalyst.

Optimization of such parameters as the solvent vol. ratio, the pH of the aq. phase, and the concn. of starting reactants showed that the

dipeptide could be synthesized on a preparative scale in ca. 100% yield. The immobilized enzyme (adsorption on the Sorsilen terephthalate support) could be used repeatedly.

Keywords

peptide synthesis enzyme catalyst biphasic system
chymotrypsin catalyst peptide synthesis biphasic system

Index Entries

Peptides, preparation
prepn. of, by chymotrypsin-catalyzed couplings in biphasic system
Catalysts and Catalysis
a-chymotrypsin, for peptide synthesis in biphasic system
9004-07-3, immobilized
catalysts, for peptide coupling of acetyltryptophan with leucinamide in biphasic system
13079-20-4
peptide coupling of, with acetyltryptophan in biphasic system, chymotrypsin catalysis of
1218-34-4
peptide coupling of, with leucinamide in biphasic system, chymotrypsin catalysis of
65356-77-6
prepn. of, by chymotrypsin-catalyzed coupling of acetyltryptophan with leucinamide in biphasic system

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102:23876

Asymmetric induction in cyclopropanation with homogeneous and immobilized chiral metal b-diketonate catalysts.
Matlin, Stephen A.; Lough, W. John; Chan, Lam; Abram, David M. H.; Zhou, Ziqing (Chem. Dep., City Univ., London EC1V 0HB, UK). J. Chem. Soc., Chem. Commun., (15), 1038-40 (English) 1984. CODEN: JCCCAT. ISSN: 0022-4936. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 24, 25, 67

When CuL₂ [L = (fluoroacetyl)camphor I; R = Me, R₁ = H, iodo; R = vinyl, R₁ = H) were used as catalysts in the cyclopropanation of styrene with 2-diazodimedone, the spiro compd. II was obtained in 21-48% yield and 73.3-100% enantiomeric excess. A silica-supported analog of CuL₂ was prepd.; this retains high activity, is readily recovered, and has recycling potential.

Keywords

copper fluoroacetylcamphor asym cyclopropanation catalyst
stereoselectivity cyclopropanation styrene diazodimedone catalyst
spirooctanedione

Index Entries

Ring closure catalysts
cyclopropanation, bis[(trifluoroacetyl)camphor]copper complexes, for styrene with diazodimedone
Asymmetric synthesis and induction
in cyclopropanation of styrene with diazodimedone, bis[(trifluoroacetyl)camphor]copper complex-catalyzed
Ring closure and formation
cyclopropanation, asym., of styrene with diazodimedone, bis[(trifluoroacetyl)camphor]copper complex-catalyzed
13395-16-9
85647-73-0

93709-06-9
 93775-84-9
 catalysts, for stereoselective cyclopropanation of styrene with
 diazodimedone
 1807-68-7
 cyclopropanation by, of styrene,
 bis[(trifluoroacetyl)camphor]copper-catalyzed,
 stereoselective
 100-42-5, reactions
 cyclopropanation of, by diazodimedone,
 bis[(trifluoroacetyl)camphor]copper-catalyzed,
 stereoselective
 93750-06-2
 prepn. and catalytic activity of silica-supported, for asym.
 cyclopropanation of styrene with diazodimedone
 93750-05-1
 prepn. and hydrosilylation of
 93750-02-8
 93750-04-0
 prepn. of
 93775-16-7
 prepn., reaction with silica, methanolysis and methylation of
 10293-09-1
 trifluoroacetylation and iodination of
 93750-03-9
 trifluoroacetylation of

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100:216268
 Attachment of trinuclear osmium and ruthenium carbonyl clusters onto
 thiol functionalized silica.
 Catrillo, T.; Knoezinger, K.; Wolf, M. (Inst. Phys. Chem., Univ.
 Muenchen, Munich 8000/2, Fed. Rep. Ger.). Inorg. Chim. Acta, 45(6),
 L235-L237 (English) 1980. CODEN: ICHAA3. ISSN: 0020-1693.
 DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
 Kinetics, and Inorganic Reaction Mechanisms)
 Analogs of $\text{HOS}_3(\text{CO})_{10}\text{SR}$ and $\text{HRu}_3(\text{CO})_{10}\text{SR}$ ($\text{R} =$
 $(\text{CH}_2)_3\text{Si}(\text{OMe})\text{Me}_2$) were anchored on thiol-modified silica surfaces
 and their thermal and catalytic properties examd.

Keywords

osmium trinuclear carbonyl attachment silica
 ruthenium carbonyl cluster silica immobilized
 thiol modified silica catalyst prepn

Index Entries

Catalysts and Catalysis
 osmium and ruthenium carbonyl clusters immobilized on
 thiol-functionalized silica
 7631-86-9, reaction products with osmium and ruthenium carbonyl
 cluster complexes
 catalysts
 90309-88-9
 90386-81-5
 reaction product with silica, catalysts

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100:162466
 Polymer-stabilized divanadium.
 Andrews, Mark; Ozin, Geoffrey A.; Francis, Colin G. (Lash Miller Chem.
 Dep., Univ. Toronto, Toronto, ON M5S 1A1, Can.). Inorg. Synth., 22,

116-23 (English) 1983. CODEN: INSYA3. ISSN: 0073-8077.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Selectivity was induced into an active heterogeneous catalyst by homogenizing it. A V dimer was trapped in a liq. polymeric support. The prepn. of polysiloxane-V2 by microscale metal vapor-matrix isolation as well as gram, synthetic scale rotary soln. reactor methods is described.

Keywords

vanadium dimer polysiloxane catalyst prepn

Index Entries

Siloxanes and Silicones, uses and miscellaneous
catalysts, vanadium dimer immobilized in, prepn. of
Catalysts and Catalysis
vanadium dimer, immobilized in polysiloxane, prepn. of
7440-62-2, uses and miscellaneous
catalysts, polysiloxanes contg. dimeric, prepn. of

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100:91954

Technological perspective for anchored catalysts.
Valentine, D., Jr.; Madonik, A. (Catal. Assoc., Inc., Santa Clara, CA 95051, USA). Prepr. - Am. Chem. Soc., Div. Pet. Chem., 27(3), 608-10 (English) 1982. CODEN: ACPCAT. ISSN: 0569-3799.
DOCUMENT TYPE: Journal; General Review CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
A review with 12 refs.

Keywords

review immobilized catalyst

Index Entries

Catalysts and Catalysis
immobilized

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100:5759

1,3-Diene-containing phase transfer catalysts and their removal from solution by a Diels-Alder reaction with an immobilized triazolinedione dienophile.
Keana, John F. W.; Ward, David D. (Dep. Chem., Univ. Oregon, Eugene, OR 97403, USA). Synth. Commun., 13(9), 729-35 (English) 1983. CODEN: SYNCAV. ISSN: 0039-7911. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds) Section cross-reference(s): 28, 29

The exchange reaction of heptyl bromide with KI, to yield heptyl iodide, was catalyzed by N-[(E,E)-8,10-dodecadien-1-yl]tributylammonium mesylate (I); I was removed from the reaction mixt. by a Diels-Alder reaction with a silica gel-supported deriv. of triazolinedione II. I and its phosphonium analog were treated with a triazolinedione deriv to give adducts III (Z = N, P).

Keywords

exchange heptyl bromide catalyst
heptyl bromide potassium iodide

dodecadienylammonium conjugated exchange catalyst
dodecadienylphosphonium Diels Alder triazolidione
Diels Alder dodecadienylammonium triazolidione

Index Entries

Exchange reaction catalysts
conjugated dodecadienyltributylammonium mesylate, for heptyl
bromide with potassium iodide, and removal by Diels-Alder
reaction
Diels-Alder reaction
of conjugated dodecadienyltributylammonium and -phosphonium
mesylates with triazolidione deriv.
Substitution reaction catalysts
nucleophilic, conjugated dodecadienyltributylammonium mesylate,
for heptyl bromide with potassium iodide
86217-87-0
Diels-Alder reaction of, with conjugated dodecadienylammonium
and dodecadienylphosphonium mesylates
102-82-9
catalysts from conjugated dodecadienyl mesylate and, for
exchange reaction of heptyl bromide with potassium iodide
88075-98-3
catalysts, for exchange reaction of heptyl bromide with potassium
iodide, and removal by Diels-Alder reaction
629-04-9
exchange reaction of, with potassium iodide, catalysts for
88076-00-0
prepn. and Diels-Alder reaction of, with triazolidione deriv
4282-40-0
88076-01-1
88076-02-2
prepn. of
88076-03-3
prepn. of, for quaternization of tributylamine and phosphine
998-40-3
quaternization of, by conjugated dodecadienyl mesylate
4019-43-6, silica gel-supported
use of, for removal of conjugated dodecadienyltributylammonium
mesylate catalysts
33956-49-9
O-mesylation of

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99:52837

Study of immobilized catalysts. V. Study of palladium-polymer
compounds by x-ray photoelectronic and IR-spectroscopic
methods.

Karklins, L.; Klyuev, M. V.; Pomogailo, A. D. (Inst. Org. Sint., Riga,
USSR). Kinet. Katal., 24(2), 408-12 (Russian) 1983. CODEN:
KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section:
22 (Physical Organic Chemistry) Section cross-reference(s): 67
The title catalysts, prepd. from K₂PdCl₄ and a
polyethylene-poly(4-vinylpyridine) graft copolymer, were active in the
reductive amination of isobutanal by PhNO₂ to give PhNHCH₂CHMe₂.
Pd @ N coordination and Pd(0) formation were demonstrated. The
activity of the immobilized Pd catalysts exceeded that of PdCl₂
complexes with 4-vinylpyridine and poly(4-vinylpyridine) owing to the
stabilization of finely dispersed Pd particles by the polymer and the
prevention of their aggregation.

Keywords

palladium polymer reductive amination isobutanal

vinylpyridine polymer palladium reductive amination
photoelectron spectra palladium polymer catalyst
IR palladium polymer catalyst

Index Entries

Amination catalysts
reductive, palladium complexes with polymers, for isobutanal by
nitrobenzene
14024-61-4
catalysts from copolymer and, for reductive amination of isobutanal
by nitrobenzene
100-43-6
25232-41-1
catalysts from palladium chloride and, for reductive amination of
isobutanal by nitrobenzene
7647-10-1
catalysts from vinylpyridine and its polymers and, for reductive
amination of isobutanal by nitrobenzene
26355-13-5, palladium complexes
catalysts, for reductive amination of isobutanal by nitrobenzene
9010-77-9, palladium complexes
graft, catalysts, for reductive amination of isobutanal by
nitrobenzene
10025-98-6
26355-13-5
photoelectron spectrum of
98-95-3, reactions
reductive amination by, of isobutanal, palladium-polymer catalysts
for
78-84-2
reductive amination of, by nitrobenzene, palladium-polymer
catalysts for

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98:198679

Enantioselective hydrolysis of α -amino esters catalyzed by chiral
complexes of transition metals immobilized on polymeric
supports.

Spassky, Nicolas; Reix, Michel; Sepulchre, Marie Odile; Guette, Jean
Paul (Lab. Chim. Macromol., Univ. Pierre et Marie Curie, Paris
75230/05, Fr.). Makromol. Chem., 184(1), 17-28 (French) 1983.

CODEN: MACEAK. ISSN: 0025-116X. DOCUMENT TYPE: Journal
CA Section: 34 (Amino Acids, Peptides, and Proteins) Section
cross-reference(s): 35

The kinetics of hydrolysis of D- and L-histidine Me ester were studied in
the presence of crosslinked hydrophilic polymer supports bearing
L-histidine moieties complexed with Ni^{2+} salt. The selectivity of
hydrolysis (kD/kL ratio) rises with increase in hydrophilic character
(content of monomeric units of 2-hydroxyethyl methacrylate) of the resin.

The best results are obtained when the ester-catalyst ratio is close to
1. The selectivity depends on the temp. and an inversion of this
selectivity is obsd. at 31°. The enantioselectivity and hydrolysis rate
were comparable to those as obsd. in a model reaction carried out
under homogeneous conditions.

Keywords

enantioselective hydrolysis histidine ester
chiral catalyst hydrolysis histidine ester
transition metal polymer support catalyst

Index Entries

Hydrolysis catalysts
 chiral nickel complex, for histidine Me ester
 Hydrolysis
 Kinetics of hydrolysis
 stereoselective, of histidine Me ester on chiral nickel complex
 85728-32-1, nickel complex
 catalysts, for enantioselective hydrolysis of histidine Me ester
 1499-46-3
 17720-12-6
 enantioselective hydrolysis of, chiral nickel complex for

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97:162121
 Photocatalytic oxidation of isobutene on immobilized tin oxide
 catalysts.
 Lyashenko, L. V.; Belousov, V. M.; Yampol'skaya, F. A. (Inst. Phys.
 Chem., Kiev, USSR). React. Kinet. Catal. Lett., 20(1-2), 59-61
 (English) 1982. CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT
 TYPE: Journal CA Section: 22 (Physical Organic Chemistry)
 Sn oxide species immobilized on silica were synthesized. These
 systems are active in the photocatalytic oxidn. of isobutene to Me₂CO,
 and their at. photocatalytic activity is almost 2 orders of magnitude
 higher than that of cryst. SnO₂.

Keywords

oxidn isobutene photocatalytic
 tin oxide silica catalyst oxidn

Index Entries

Oxidation catalysts
 photochem., tin oxide-silica, for isobutene
 1332-29-2
 catalysts, on silica, for photooxidn. of isobutene
 115-11-7, reactions
 photochem. oxidn. of, on tin oxide-silica catalyst

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97:151306
 Gas absorption utilizing magnetite-containing catalyst particles.
 Sada, Eizo; Katoh, Shigeo (Fac. Eng., Kyoto Univ., Kyoto 606, Japan).
 Kenkyu Hokoku - Asahi Garasu Kogyo Gijutsu Shoreikai, 39, 193-6
 (Japanese) 1981. CODEN: AGKGAA. ISSN: 0365-2599.
 DOCUMENT TYPE: Journal CA Section: 66 (Surface Chemistry and
 Colloids) Section cross-reference(s): 48, 67
 Acrylamide beads with av. diam. 80-120 m contg. Fe₃O₄ were prepd.
 With the aid of a rotating magnetic field, interfacial turbulence was
 caused, and the rate of phys. absorption of CO₂ into H₂O and 40 wt.%
 aq. glycerol was enhanced. By introducing glucose oxidase carried by
 Fe₃O₄ into microbeads, rates of phys. and chem. absorption of O₂ were
 also enhanced.

Keywords

oxygen absorption acrylamide bead suspension
 carbon dioxide absorption aq glycerol
 catalyst glucose oxidase oxygen absorption

Index Entries

Absorption
 of gases, by solns. with turbulence induced by magnetic field effect

on acrylamide beads contg. iron oxide
 1317-61-9, uses and miscellaneous
 absorption of gases by solns. contg. suspended microbeads with
 imbedded, for turbulence promotion
 124-38-9, properties
 absorption of, by aq. glycerol contg. suspension microbeads with
 magnetic iron oxide for turbulence promotion
 7782-44-7, properties
 absorption of, by aq. solns. contg. suspended microbeads with
 magnetic iron oxide for turbulence promotion and glucose
 oxidase for enhanced rates
 9001-37-0
 immobilized, on acrylamide beads, oxygen absorption by aq.
 solns. promoted by

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97:61679

Properties of immobilized transition metal complex catalysts and their
 application to nitrogen fixation.
 Sun, Chunting; Liu, Xueming (Dep. Chem., Jilin Univ., Changchun,
 Peop. Rep. China). Cuihua Xuebao, 3(2), 154-63 (Chinese) 1982.
 CODEN: THHPD3. DOCUMENT TYPE: Journal; General Review CA
 Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
 Mechanisms)
 A review with 30 refs.

Keywords

review transition metal complex catalyst
 nitrogen fixation catalyst review

Index Entries

Transition metals, compounds
 complexes, for nitrogen fixation catalysts
 Nitrogen fixation catalysts
 transition metal complexes for

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96:199018

Hydroformylation over a rhodium complex catalyst immobilized with
 chelate resin.
 Hirai, Hidefumi; Komatsuzaki, Shigeru; Hamasaki, Shunichi; Toshima,
 Naoki (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Nippon Kagaku
 Kaishi, (2), 316-19 (Japanese) 1982. CODEN: NKAKB8. ISSN:
 0369-4577. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic
 Compounds)
 The polymer-immobilized Rh complex prepd. from RhCl₃ and
 chelate-resins with iminodiacetic acid moieties (catalyst A) had
 catalytic activity for hydroformylation of 1-hexene in EtOH at 100° under
 20 atm of H₂ and 20 atm of CO. The normal/branched ratio in the
 aldehyde was 2.3. The same chelate-resin and
 (acetylacetonato)dicarbonylrhodium(I) gave another immobilized Rh(I)
 complex catalyst, which had a much higher activity than catalyst A. The
 normal/branched aldehyde ratio was 0.7.

Keywords

hydroformylation hexene rhodium polymer catalyst

Index Entries

Hydroformylation catalysts

rhodium-polymer complexes, for hexene
 142-73-4, chelate resins, rhodium complexes
 10049-07-7, reaction product with chelate resin
 14874-82-9, reaction product with chelate resin
 catalysts, for hydroformylation of hexene
 592-41-6, reactions
 hydroformylation of, rhodium-polymer complex catalysts for

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96:141225

Fructose from glucosone using enzymes.
 Maselli, John A.; Horwath, Robert O. (Standard Brands Inc., USA).
 PCT Int. Appl. WO 8103666 A1 24 Dec 1981, 14 pp. DESIGNATED
 STATES: W: AU, BR, FI, HU, JP, SU; RW: DE, FR, GB, NL, SE.
 (English). (World Intellectual Property Organization). CODEN: PIXXD2.
 CLASS: IC: C12P007-26; C12P019-02; C12N011-00.
 APPLICATION: WO 81-US823 18 Jun 1981. PRIORITY: US
 80-160762 18 Jun 1980. DOCUMENT TYPE: Patent CA Section: 16
 (Fermentation and Bioindustrial Chemistry)
 glucosone [26345-59-5] Is first produced from glucose [50-99-7] by
 oxidn. with glucose 2-oxidase [73903-92-1] in the presence of an
 immobilized H2O2-reducing enzyme followed by the redn. of glucosone
 to fructose [57-48-7]. Thus, the mycelium of Oudemansiella mucida,
 produced according to an established procedure, was suspended in a
 2.5% glucose soln. along with catalase [9001-05-2] immobilized on
 DEAE-cellulose. After mixing the suspension for 24 h at 25°, it was
 filtered and the filtrate hydrogenated over Raney Ni at 500 atm and
 100°. The mixt. was again filtered and the filtrate decolorized,
 deionized, and concd. to a fructose syrup or the fructose allowed to
 crystalize.

Keywords

glucose oxidn glucosone fructose prodn

Index Entries

Oudemansiella mucida
 glucose oxidn. with, in fructose manuf.
 7440-02-0, uses and miscellaneous
 as catalyst, in fructose manuf. from glucose and glucosone
 9001-05-2
 9003-99-0
 immobilized, hydrogen peroxide redn. by, in glucose prodn.
 37250-80-9
 in glucosone prodn. from glucose and fructose manuf.
 57-48-7, preparation
 manuf. of, from glucose via glucosone
 26345-59-5
 manuf. of, from glucose, and fructose prodn. from
 50-99-7, biological studies
 oxidn. of, enzymic, in fructose prodn.
 7722-84-1, reactions
 redn. of, with immobilized enzyme, in fructose manuf. from glucose

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96:67175

Heterogeneous biocatalysis with microorganisms attached to polymer.
 Klein, Joachim (Fed. Rep. Ger.). Nachr. Chem., Tech. Lab., 29(12),
 850-4 (German) 1981. CODEN: NCTLDI. ISSN: 0341-5163.
 DOCUMENT TYPE: Journal; General Review CA Section: 16
 (Fermentation and Bioindustrial Chemistry)
 A review with 25 refs. on the immobilization of microorganisms and

their catalytic activity.

Keywords

review immobilized microorganism catalyst

Index Entries

Microorganism

immobilization and catalytic activity of

Catalysts and Catalysis

immobilized microorganisms as

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105:63336

Oxidation of ethyl mercaptan on cobalt(II) complexes immobilized on silicon dioxide surface.

Andreev, A. A.; Tashkova, K. (Burgas Inst. Chem. Technol., Burgas, Bulg.). Dokl. Bolg. Akad. Nauk, 39(4), 59-62 (English) 1986. CODEN: DBANAD. ISSN: 0366-8681. DOCUMENT TYPE: Journal CA

Section: 51 (Fossil Fuels, Derivatives, and Related Products) Section cross-reference(s): 67

The increasing order of activity of Co(II) complexes anchored to the surface of amorphous SiO₂ via a coordination bond with pyridine [110-86-1] in the oxidn. of EtSH [75-08-1] to Et₂S₂ [110-81-6] at 298 K was Co(II) bis(salicylal-o-phenylenediamine) [17457-14-6] » Co(II) phthalocyanine [3317-67-7] > Co phthalocyanine sulfonate Na salt [27459-40-1] u Co(II) acetylacetonate [14024-48-7].

Keywords

gasoline mercaptan oxidn cobalt complex
catalyst mercaptan oxidn cobalt pyridine

Index Entries

Gasoline

mercaptan removal from, by oxidn., catalysts for, pyridine-anchored cobalt complexes as

Oxidation catalysts

pyridine-anchored cobalt complexes on silica, for Et mercaptan, in gasoline

Petroleum refining catalysts

oxidn., pyridine-anchored cobalt complexes on silica, for Et mercaptan, in gasoline

3317-67-7

14024-48-7

17457-14-6

27459-40-1

catalysts, contg. pyridine and silica, for Et mercaptan oxidn., to Et disulfide, in gasoline

110-86-1, uses and miscellaneous

cobalt-complex catalysts contg. silica and, for Et mercaptan oxidn., in gasoline

110-81-6

formation of, in Et mercaptan oxidn., catalysts for, pyridine-anchored cobalt complexes as

75-08-1

oxidn. of, to Et disulfide, catalysts for, pyridine-anchored cobalt complexes as

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105:24156

Hydrodehalogenation of bromo- and chloropyridines on complex and metallic palladium catalysts.

Gurovets, A. S.; Shaff, V. Z.; Belen'kii, L. I. (Inst. Org. Khim., Moscow 117913, USSR). Khim. Geterotsikl. Soedin., (9), 1229-32 (Russian)

1985. CODEN: KGSSAQ. ISSN: 0453-8234. DOCUMENT TYPE:

Journal CA Section: 27 (Heterocyclic Compounds (One Hetero Atom))

Dehalogenation of 2-chloro-, 2-bromo-, 3-bromo-, and 3,5-dibromopyridines catalyzed by palladium chloride complexes immobilized on silica gel modified by γ -aminopropyl groups (Pd-APS), and Pd-C-catalysts confirmed that removal of bromine from bromopyridines on Pd-APS proceeds at a significantly higher rate than that of bromo-substituted compds. in the furan and thiophene series. Debromination on Pd-C proceeds faster than on Pd-APS. On both catalysts 3-bromopyridine debrominates faster than the 2-isomer. Addnl. obtained was pyridine-3,5-d2.

Keywords

hydrodehalogenation halopyridine palladium catalyst
debromination bromopyridine

Index Entries

Dehalogenation
of halopyridines, catalytic
Dehalogenation catalysts
palladium chloride complexes immobilized on silica gel modified
by γ -aminopropyl groups, for bromo- and chloropyridines
109-04-6
109-09-1
625-92-3
626-55-1
debromination of, on palladium catalysts
110-86-1, preparation
formation of, in dehalogenation of bromo- and chloropyridines on
palladium catalysts

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104:189664

Immobilization of chloroplasts, cyanobacteria, and semiconductor redox catalysts for the photoproduction of hydrogen.

Cuendet, P.; Rao, K. K.; Hall, D. O.; Graetzel, M. (Inst. Chim. Phys., Ec. Polytech. Fed., Lausanne CH-1015, Switz.). Eur. Congr. Biotechnol., 3rd, Volume 2, 371-4. Verlag Chemie: Weinheim, Fed. Rep. Ger.

(English) 1984. CODEN: 55BBA6. DOCUMENT TYPE: Conference;

General Review CA Section: 52 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 49, 74

A review with 19 refs. on photosynthetic app. coupled to natural or artificial redox catalysts for H prodn. or to inorg. semiconducting materials for energy conversion. Immobilization techniques and materials are discussed.

Keywords

hydrogen photoprodn redox catalyst review
chloroplast cyanobacteria hydrogen photoprodn review
semiconductor hydrogen photoprodn review

Index Entries

Chloroplast
Cyanobacteria
immobilization of, for hydrogen photoprodn.
Photolysis catalysts

semiconductor, in hydrogen manuf.
1333-74-0, preparation
manuf. of, by photoredn. of water, with immobilized redox catalysts

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103:180600

Application of rhodium complex catalysts for dearomatization of special petroleum products.

Rajca, Irena; Kisielow, Wlodzimierz; Wolny, Krystyna (Zakl. Petro-Karbochem., Pol. Akad. Nauk, Gliwice, Pol.). Chem. Stosow., 28(3-4), 407-13 (Polish) 1984. CODEN: CHSWAP. ISSN: 0376-0898.

DOCUMENT TYPE: Journal CA Section: 51 (Fossil Fuels, Derivatives, and Related Products) Section cross-reference(s): 67

Dearomatization of petroleum fractions, e.g., hexane fraction (b. 339-342° K), gasoline fraction (b. 318-453° K) or C10-C13 and C14-C18 paraffins was carried out at mild conditions with the catalyst either homogeneous (Rh complex (I) of K indigodisulfonate) or heterogeneous (Rh complex of anthranilic acid (II) or N-phenylanthranilic acid (III), or Rh complex of K indigodisulfonate immobilized on Amberlyst A-27 (IV)). The substrate was used as dissolved in MeOH or EtOH. The catalyst IV had low activity, whereas I decompd. during the dearomatized products distn.; II and III remained active and could be reused. Benzene was totally removed after 1.5 h, the amt. of toluene and ethylbenzene was reduced by one half, but arom. components of the paraffins (monocyclic aroms. with C³10 alkyl substituents and bicyclic ones with short side chains) remained unaffected even at H pressure 2 MPa.

Keywords

petroleum product dearomatization rhodium catalyst

Index Entries

Aromatic hydrocarbons, uses and miscellaneous
removal of, from petroleum products, rhodium org. complex
catalysts for
Petroleum refining catalysts
dearomatization, rhodium org. complexes
91-40-7, rhodium complexes
118-92-3, rhodium complexes
7440-16-6, org. complexes
13725-33-2, rhodium complexes
catalysts, for dearomatization, of petroleum products
9074-22-0
rhodium complexes immobilized on, in dearomatization of
petroleum products

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103:166824

Immobilized catalysts. XIV. Effect of conditions of the synthesis on the fixation of copper complexes.

Pomogailo, A. D.; Golubeva, N. D. (Inst. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 26(4), 947-52 (Russian) 1985. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section:

67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 37

The synthesis of Cu-supported polymer catalysts was studied for the reaction of Cu(OAc)₂ with a polyethylene-grafted poly(acrylic acid) support. The Cu reacts with surface carbonyl groups to form surface complexes. Possible reaction mechanisms are discussed. The amt. of fixed Cu increases as the reaction temp. and the Cu(OAc)₂ concn. increase.

Keywords

copper fixation polymer support catalyst
polyethylene graft acrylic acid polymer support

Index Entries

Catalysts and Catalysis

copper-polymer, surface fixation mechanism for
9010-77-9
catalysts from fixation of copper on, by complexation
7440-50-8, uses and miscellaneous
catalysts, supported by polyethylene-grafted copolymer with acrylic
acid
142-71-2
reactions of, with polyethylene-graft copolymer with acrylic acid, in
catalysts prepn.

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102:156794

Catalytic electroreduction of molecular oxygen at glassy carbon
electrodes with immobilized iron porphyrins containing zero, one,
or four amino groups.
Kobayashi, Nagao; Nishiyama, Yoshiyuki (Chem. Res. Inst.
Non-Aqueous Solut., Tohoku Univ., Sendai 980, Japan). J. Electroanal.
Chem. Interfacial Electrochem., 181(1-2), 107-17 (English) 1984.
CODEN: JEIEBC. ISSN: 0022-0728. DOCUMENT TYPE: Journal CA
Section: 72 (Electrochemistry) Section cross-reference(s): 67
Redn. of O₂ at glassy C (GC) electrodes modified with Fe
tetraphenylporphyrin derivs. (FeTPPs) having 0, 1, or 4 amino groups
was studied by several electrochem. methods. The nos. of porphyrin
layers required to attain 4-electron redn. in water were ~8, 5, and 2 for
FeTPPs contg. 0, 1 and 4 amino groups, resp., indicating that the
functional group does influence O₂ redn. Moreover, the rate consts.
governing the reaction of the catalysts with O were larger for FeTPPs
with more amino groups. Ellipsometry on the modified GCs suggested
that the porphyrin mols. are nearly stratified on the GC surface and
therefore that the interdistance of the porphyrin plane is not a significant
factor affecting the 4-electron redn. of O₂.

Keywords

oxygen electrocatalytic redn iron aminophenylporphyrin
catalyst electroredn iron aminophenylporphyrin oxygen
kinetics oxygen electroredn iron aminophenylporphyrin

Index Entries

Transfer coefficient

in electrochem. redn. of oxygen at porphyrin-coated glassy carbon
electrodes

Adsorbed substances

iron complexes with amino derivs. of tetraphenylporphyrin, on
glassy carbon electrodes, oxygen electrocatalytic redn. in
relation to

Reduction, electrochemical

of oxygen, on glassy carbon modified with iron complexes of amino
derivs. of tetraphenylporphyrin

Reduction catalysts

electrochem., iron complexes with amino derivs. of
tetraphenylporphyrins, on glassy carbon for oxygen

Kinetics of reduction

electrochem., of oxygen, on glassy carbon modified with iron

complexes of amino derivs. of tetraphenylporphyrin

71547-22-3

86619-55-8

95268-02-3

95268-03-4

electrocatalysts, on glassy carbon electrode for oxygen redn.

7440-44-0, uses and miscellaneous

electrodes from glassy, modified with iron complexes of amino derivs. of tetraphenylporphyrin, oxygen electrocatalytic redn.

on

16591-56-3

oxygen electroredn. kinetics on glassy carbon coated with,

comparison with iron complexes with amino derivs. of

tetraphenylporphyrin

7782-44-7, reactions

redn. of, electrocatalytic, on glassy carbon electrodes modified with iron complexes with amino derivs. of tetraphenylporphyrin

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102:12730

Kinetics of the complexing of potassium tetrathiocyanocobaltate with the anion exchanger ARA-12p.

Klyuev, M. V.; Gorlova, E. V. (Ivanov. Gos. Univ., Ivanovo, USSR). Zh.

Obshch. Khim., 54(9), 2009-12 (Russian) 1984. CODEN: ZOKHA4.

ISSN: 0044-460X. DOCUMENT TYPE: Journal CA Section: 66

(Surface Chemistry and Colloids) Section cross-reference(s): 67

The kinetics of Co(SCN)₄²⁻ binding by ARA-12p (a

chloromethylaminated styrene-divinylbenzene copolymer with

(p-benzyl)trimethylammonium chloride side groups) were studied

spectrophotometrically. The reaction is 2nd order in Co(SCN)₄²⁻. The

rate depends on the exchangeable anion and decreases in the order F⁻

> NO₃⁻ > OH⁻ > Br⁻ > Cl⁻ > I⁻ > SO₄²⁻. The Co(SCN)₄²⁻-ARA-12p

complex acts as a hydrogenation catalyst for PhNO₂.

Keywords

anion exchange kinetics cobalt thiocyanate

hydrogenation catalyst cobalt thiocyanate

Index Entries

Hydrogenation catalysts

cobalt thiocyanato complex, immobilized on anion exchanger

Anion exchange

of cobalt thiocyanato complex, on ARA 12p resin, kinetics of

9003-70-7, chloromethylaminated benzyltrimethyl ammonium chloride deriv.

18904-81-9

anion exchange of, kinetics of

14280-30-9, properties

14797-55-8, properties

14808-79-8, properties

16887-00-6, properties

16984-48-8, properties

20461-54-5, properties

24959-67-9, properties

anion exchange of, with cobalt thiocyanate complex, kinetics of

93792-51-9

anion exchange on, of cobalt thiocyanate complex

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101:72356

Hydrophilic polymer-immobilized lipoamides-iron(II) system as a new

reducing catalyst for the reduction of o-benzylhydroxylamine by sodium borohydride.

Kijima, Masashi; Nambu, Yoko; Endo, Takeshi; Okawara, Makoto (Res. Lab. Resour. Util., Tokyo Inst. Technol., Yokohama 227, Japan). J. Polym. Sci., Polym. Chem. Ed., 22(3), 821-30 (English) 1984.

CODEN: JPLCAT. ISSN: 0449-296X. DOCUMENT TYPE: Journal
CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Lipoamides (having the 1,2-dithiolane equil. redox system with 1,3-dithiols) immobilized on hydrophilic polyacrylamide, polyethyleneimine, or chitosan are polymeric reducing catalysts for the redn. of $\text{PhCH}_2\text{ONH}_2$, to PhCH_2OH and NH_3 , by NaBH_4 and Fe^{2+} . These polymers were easily sep'd. from the reaction mixts. and maintained high reactivities after repeated use.

Keywords

lipoamide polymeric reagent
redn catalysts benzylhydroxylamine ferrous
borohydride redn benzylhydroxylamine

Index Entries

Polymer-supported reagents
lipoamides, redn. catalysts with ferrous, for benzylhydroxylamine by sodium borohydride
Reduction catalysts
polymer type lipoamides with ferrous for benzylhydroxylamine by sodium borohydride
25034-58-6, Hofmann rearrangement product, reaction product with lipoic anhydride
59-52-9
496-74-2
940-69-2
940-69-2, polymer bound
2150-02-9
3884-47-7
9002-98-6, reaction product with lipoic anhydride
9012-76-4
9012-76-4, reaction product with lipoic anhydride
25034-58-6, Hoffman rearrangement product, reaction product with lipoic anhydride
91319-83-4, reaction product with amino group contg. polymers
catalysts with ferrous, for redn. of benzylhydroxylamine by sodium borohydride
15438-31-0, reactions
catalysts with polymer supported lipoamide, for redn. of benzylhydroxylamine by sodium borohydride
100-51-6, preparation
7664-41-7, reactions
formation of, by catalyzed redn. of benzylhydroxylamine by sodium borohydride
16940-66-2
redn. by, of benzylhydroxylamine, catalysts for
622-33-3
redn. of, by sodium borohydride, ferrous-polymer supported
lipoamides as catalysts for

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100:177757

Study of an alkaline fuel cell with matrix and no precious catalyst. Doniat, Denis; Rouget, R. (SORAPEC S.A., Fontenay-sous-Bois 94124, Fr.). Comm. Eur. Communities, [Rep.] EUR, EUR 8660, Energy Conserv. Energy Storage, Adv. Batteries Fuel Cells, 82-101

(French) 1984. CODEN: CECED9. DOCUMENT TYPE: Report CA
Section: 52 (Electrochemical, Radiational, and Thermal Energy
Technology)

Advantages of an immobilized electrolyte in a matrix are high compactness of the cell, few elec. linkage when a serial assembly of the elements is realized, and lightwt. of auxiliaries. New electrode structures were developed. Sponge metal permits good elec. contact between the catalyst and Ni, and no loss of the catalyst from the conductive structure occurs. Fibrous matrixes, which were tried, offer good electrolyte absorption capacity and for some of them, high bubble point. The fuel cell realized has a good performance.

Keywords

fuel cell electrolyte matrix

Index Entries

Fuel cells

hydrogen-air, alk., with matrix-immobilized electrolyte,
development and performance of

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100:153210

A catalytic immunoreactor for the amperometric determination of human serum albumin.

Karube, Isao; Matsunaga, Tadashi; Satoh, Takeru; Suzuki, Shuichi
(Res. Lab. Resour. Util., Tokyo Inst. Technol., Yokohama 227, Japan).
Anal. Chim. Acta, 156, 283-7 (English) 1984. CODEN: ACACAM.

ISSN: 0003-2670. DOCUMENT TYPE: Journal CA Section: 9

(Biochemical Methods) Section cross-reference(s): 15

A catalytic immunoreactor for the detn. of human serum albumin (HSA) was constructed by using immobilized antibody and an amperometric detector. A sandwich assay with hemin-labeled antibody to catalyze the decompn. of H₂O₂ was used, and the catalytic activity of the hemin-antibody conjugate was detd. by measuring the decrease in H₂O₂ concn. The reaction of hemin-labeled antibody with antigen was complete within 30 min, and the current decrease was correlated with the HSA concn. The relative std. deviation was ~9% at an HSA concn. of 1 mg/mL.

Keywords

serum albumin detn amperometry app
catalyst immunoreactor amperometry serum albumin

Index Entries

Molecular sieves

-5A, reaction products with aminopropyltriethoxysilane, prepn. and antibody immobilization on, for detn. of blood serum albumins of humans

Amperometry

blood serum albumins detn. by, catalytic immunoreactor for

Albumins, blood serum

detn. of, of humans by amperometry with catalytic immunoreactor

Antibodies

to blood serum albumins of humans, reaction products with hemin

or solid phase, prepn. of

Immunochemical analysis

amperometric immunoassay, for blood serum albumins of humans,

catalytic immunoreactor for

Reactors

catalytic, with immobilized antibody, for amperometric detn. of

blood serum albumins of humans

Electrodes

hydrogen peroxide-selective, amperometric, in immunoreactor for
biochem. anal.

21729-84-0, reaction products with Mol. Sieve 5A

prepn. and antibody immobilization on, for detn. of blood serum
albumins of humans

16009-13-5, reaction products with antibody to human blood serum
albumin

prepn. of, for amperometric detn. of blood serum albumins

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100:52161

Carboranyl methylene-substituted phosphazenes and their polymers.

Allcock, Harry R.; Scopelianos, Angelo G. (Pennsylvania State

University, USA). U. S. Pat. Appl. US 491125 A0 14 Oct 1983, 19 pp.

Avail. NTIS Order No. PAT-APPL-6-491 125 (English). (United States
of America). CODEN: XAXXAV. APPLICATION: US 83-491125 3

May 1983. DOCUMENT TYPE: Patent CA Section: 35 (Chemistry of

Synthetic High Polymers) Section cross-reference(s): 42, 76

Carboranylmethylene-substituted cyclophosphazenes are prepd. and
thermally polymd. to produce polymers which are useful as thermally
stable coatings. These polymers are used as a ligand for transition

metals to produce immobilized catalysts which are elec. conductive

and superconductive. Thus, 10 mL MeMgCl was added dropwise to a

mixt. of 5.0 g hexachlorocyclotriphosphazene [940-71-6] and 0.019

mol (Bu₃PCuI)₄ [59245-99-7] in 150 mL THF at -80°. The mixt. was

stirred at 25° for 12 h. The mixt. was cooled to 0° and 10 mL iso-PrOH

[67-63-0] was added to give

1-methyl-1-hydridotetrachlorocyclotriphosphazene (I) [68351-74-6].

MeLi (0.019 mol) was added dropwise to 6.9 g I in 150 mL THF at

-80°. After 30 min, 10 mL HCYCCH₂Br [106-96-7] was added over

30 min. The mixt. was stirred at 25° for 12 h to give

1-methyl-1-(1-propynyl)tetrachlorocyclotriphosphazene (II)

[77217-53-9]. A soln. of 2.8 g decaborane [12008-62-7] in 30 mL

acetonitrile and 150 mL C₆H₆ was refluxed for 4 h. II (4.40 g) in 50 mL

C₆H₆ was added dropwise over 1 h to the above-refluxed soln. The

mixt. was refluxed for 24 h to give

1-methyl-1-methylene-o-carboranyltetrachlorocyclotriphosphazene

(III) [84254-25-1] having m.p. 186-188°. III (2 g) was heated at 250° for

6.5 h to give a polymer [88480-86-8].

Keywords

hexachlorocyclophosphazene carboranylmethylene cyclophosphazene

methylmagnesium chloride catalyst cyclophosphazene prepn

propargyl bromide carboranylmethylene cyclophosphazene prepn

decaborane carboranylmethylene cyclophosphazene prepn

tetrachlorocyclotriphosphazene carboranylmethylene polymer prepn

phosphazene carboranylmethylene polymer transition metal

Index Entries

Coating materials

carboranylmethylene-substituted cyclophosphazene polymers,

thermally stable

Catalysts and Catalysis

Electric conductors

Superconductors

immobilized metallocarboranylmethylene phosphazene polymers

84254-25-1

manuf. and polymn. of

77217-53-9

manuf. and reaction of, with decaborane

68351-74-6
 manuf. and reaction of, with propargyl bromide
 84254-26-2
 88473-56-7
 88480-85-7
 88480-86-8
 88480-92-6
 88483-01-6
 manuf. of, for coatings
 110-89-4, reaction products with carboranylmethylene-substituted
 cyclotriphosphazene polymers
 7646-69-7, reaction products with transition metal carbonyls and
 carboranylmethylene-substituted cyclotriphosphazene polymers
 modified by piperidine
 13939-06-5, reaction products with sodium hydride and
 carboranylmethylene-substituted cyclotriphosphazene polymers
 modified by piperidine
 14040-11-0, reaction products with sodium hydride and
 carboranylmethylene-substituted cyclotriphosphazene polymers
 modified by piperidine
 47897-43-8, reaction products with carboranylmethylene-substituted
 cyclotriphosphazene polymers modified by piperidine
 prepn. of
 59245-99-7
 reaction of, with hexachlorocyclotriphosphazene
 67-63-0, reactions
 reaction of, with hexachlorocyclotriphosphazene and
 tetraiodotetrakis(tributylphosphine)tetracopper reaction
 products
 106-96-7
 reaction of, with hydridomethyltetrachlorocyclotriphosphazene
 12008-62-7
 reaction of, with methylpropynyltetrachlorocyclotriphosphazene
 940-71-6
 reaction of, with tetraiodotetrakis(tributylphosphine)tetracopper

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99:219346
 Surface metal clusters. Immobilized carbonyl catalysts.
 Nakamura, Ryuichi; Ohmura, Akihiro (Coll. Eng., Tokyo Inst. Technol.,
 Tokyo, Japan). Hyomen, 21(10), 565-86 (Japanese) 1983. CODEN:
 HYMN7. ISSN: 0367-648X. DOCUMENT TYPE: Journal; General
 Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
 Reaction Mechanisms)
 A review with 113 refs. on metal cluster-transition metal carbonyls in
 catalysts.

Keywords

review carbonyl metal cluster catalyst

Index Entries

Transition metals, compounds
 cluster compds., in catalysts
 Cluster compounds
 in catalysts
 Catalysts and Catalysis
 metal cluster-transition metal carbonyls in
 Carbonyls
 transition metal, in catalysts

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99:59486

Heterogenized rhodium complexes as hydrogen transfer catalysts.

Oro, L. A.; Sariego, R. (Dep. Inorg. Chem., Univ. Zaragoza, Zaragoza, Spain). React. Kinet. Catal. Lett., 21(4), 445-8 (English) 1982.

CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT TYPE: Journal

CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Cationic Rh(I) norbornadiene complexes with polystyrene-immobilized imidazole, tetramethylbiimidazole or phosphine ligands in the presence of KOH catalyze H transfer from isopropanol to acetophenone and 1-hexene. [Rh(NBD)(poly-PPh₂)₂]ClO₄ complexes are particularly efficient for the redn. of acetophenone, but slow decompn. to Rh metal is obsd.

Keywords

rhodium complex catalysis hydrogen transfer
redn catalyst rhodium norbornadiene imidazole fixed

Index Entries

Hydrogen transfer catalysts

Reduction catalysts

rhodium norbornadiene complexes with polystyrene-immobilized ligands, for acetophenone redn.

121-46-0, surface complex with rhodium and polystyrene grafted ligand

288-32-4, rhodium complex with polystyrene-immobilized

7440-16-6, norbornadiene complexes with polystyrene-grafted ligand

9003-53-6, rhodium complex with

9003-70-7, chloromethylated diphenylphosphine deriv., complex with rhodium and norbornadiene

32799-31-8

69286-06-2, polystyrene derivs., rhodium complexes catalysts, hydrogen transfer

98-86-2, uses and miscellaneous

592-41-6, uses and miscellaneous

hydrogen transfer from isopropanol to, rhodium-norbornadiene fixed catalysts for

67-63-0, uses and miscellaneous

hydrogen transfer from, to acetophenone and hexene, propionic rhodium norbornadiene catalysts for

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99:18917

Microbial catalysts for steroid transformations. Part 2.

Kolot, F. B. (Rickville, MD 20851, USA). Process Biochem., 18(1), 19-21 (English) 1983. CODEN: PRBCAP. ISSN: 0032-9592.

DOCUMENT TYPE: Journal; General Review CA Section: 9

(Biochemical Methods)

A review with many refs.

Keywords

review microbial catalyst steroid transformation

Index Entries

Steroids, reactions

transformations of, microbial catalysts for

Microorganism

immobilized, for steroid transformations

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98:43430

Photoacoustic spectroscopy of chemically modified surfaces.

Burggraf, Larry Wilson (Air Force Inst. Tech., Wright-Patterson AFB, OH, USA). Report, AFIT/NR/81-16D; Order No. AD-A116777, 278 pp.

Avail. NTIS From: Gov. Rep. Announce. Index (U. S.) 1982, 82(23), 4840 (English) 1981. DOCUMENT TYPE: Report CA Section: 73

(Optical, Electron, and Mass Spectroscopy and Other Related Properties) Section cross-reference(s): 66, 67

Photoacoustic spectroscopy was applied to the study of the species on chem. modified surfaces. The theory for thermally thick samples is cast into a form more suitable for quantification. The photoacoustic magnitude and phase information are combined in a response function which is linear with optical absorption. The theory is extended to account for scattered-light effects in intensely light-scattering materials. Also, a method to correct for the effects of stray light in photoacoustic spectroscopic is presented. The potential of this spectroscopic technique for obtaining UV absorption spectra of org. functional groups immobilized on silica surfaces by silylation was demonstrated. The complexation of Cu(II) by an ethylenediamine analog immobilized on silica gel by silylation was characterized by photoacoustic spectroscopy and heterogeneous binding studies. Independent single and double binding sites are formed on the silica surface. Photoacoustic spectroscopy was used to study Ni/g-Al₂O₃, Co/g-Al₂O₃ and CoMo/g-Al₂O₃ catalysts. Visible spectral features are identified with octahedrally and tetrahedrally coordinated metal ions and metal oxides. A model is advanced to account for the dependence of speciation on metal loading and calcination temp.

Keywords

photoacoustic spectroscopy UV surface species
catalyst photoacoustic spectroscopy UV

Index Entries

Silica gel, properties
photoacoustic spectroscopy in study of copper complexation by ethylenediamine deriv. immobilized on
Adsorbed substances
Catalysts and Catalysis
photoacoustic spectroscopy of
Photoacoustic effect
spectroscopy, of chem. modified surfaces
Ultraviolet and visible spectrometry
photoacoustic, of chem. modified surfaces
7439-98-7, properties
7440-02-0, properties
7440-48-4, properties
catalysts from aluminum oxide contg., photoacoustic spectroscopy of
1344-28-1, properties
catalysts from transition-metal contg., photoacoustic spectroscopy of
107-15-3, derivs.
complexation of copper by, photoacoustic spectroscopy in study of
7440-50-8, reactions
complexation of, by ethylenediamine deriv., photoacoustic spectroscopy in study of

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97:98402

Binding a biologically active material, specifically urease or other proteins to a carrier containing hydroxyl groups.
Lehmann, Hans Dieter; Krisam, Gerd Gustav; Golla, Ruth Sibylle

(Gambro Dialysatoren K.-G., Fed. Rep. Ger.). Eur. Pat. Appl. EP 52365 A1 26 May 1982, 22 pp. DESIGNATED STATES: R: AT, BE, CH, DE, FR, GB, IT, LU, NL. (English). (European Patent Organization). CODEN: EPXXDW. CLASS: IC: C12N011-02; C07G007-00. APPLICATION: EP 81-109709 16 Nov 1981. PRIORITY: SE 80-8096 19 Nov 1980. DOCUMENT TYPE: Patent CA Section: 63 (Pharmaceuticals) Section cross-reference(s): 7 urease (I) [9002-13-5] is bound to a Cuprophan hollow fiber membrane or other polymer to be used in hydrolyzing urea [57-13-6] in dialyzates of a hemodialysis app. Thus, Cuprophan hollow fibers contained in a fiber dialyzer were impregnated with the nontoxic urethane formation catalyst tetrabutyltitanate [5593-70-4] and then with hexamethylene diisocyanate N,N',N''-tris(6-isocyanatohexyl)biuret(II). I was then bound to the activated Cuprophan (contg. bound urethane) by either a single pass or recirculation method. The highest activity of the bound I (906 mg urea hydrolyzed in 3 h) when 3000-5000 units of I were used before binding was obtained with the longest periods for binding the titanate and II. Increasing the titanate concn. also increased I binding. Alternatively, the ethylene-vinyl alc. copolymer Levasint could be used to bind I. With the latter, however, the covalent binding of I was smaller and the noncovalent contribution larger than with Cuprophan. Binding of albumin to Levasint was also performed after activation of the carrier. The tendency of the latter carrier to float on the surface of aq. solns. makes Cuprophan the preferred carrier.

Keywords

urease immobilization hemodialysis
Cuprophan membrane urease immobilization
albumin immobilization dialysis membrane

Index Entries

Albumins, blood
immobilization of, on Levasint polymer, for hemodialysis
Urethane polymers, compounds
reaction products with Cuprophan membranes, for urease
immobilization in hemodialysis
Circulation
extracorporeal, urease immobilization on dialysis membrane for,
for human
Membrane, biological
hemodialysis, Cuprophan, urease immobilization on, for urea
removal in human
9002-13-5
immobilization of, on Cuprophan dialysis membrane or Levasint
79217-73-5, reaction products with Cuprophan membrane and urease
82860-02-4, reaction products with Cuprophan membrane and urease
prepn. of, for hemodialysis
28679-16-5
reaction of, with Cuprophan dialysis membrane, for urease
immobilization
57-13-6, biological studies
removal of, from human hemodialyzate, by urease immobilized on
dialysis membrane
5593-70-4
urethane formation catalyst, for urease immobilization on
Cuprophan-urethane membrane

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97:92252

The esterification of potassium carboxylates with alkyl halides in the presence of a cryptand immobilized on a polymer support.
Takimoto, Seiji; Koder, Yasushi; Ohta, Hiroshi (Fac. Sci., Fukuoka

Univ., Fukuoka 814-01, Japan). Fukuoka Daigaku Rigaku Shuho, 12(1), 27-8 (English) 1982. CODEN: FDRSDG. ISSN: 0386-118X. DOCUMENT TYPE: Journal CA Section: 28 (Heterocyclic Compounds (More Than One Hetero Atom))

Potassium alkanoates RCO_2K ($\text{R} = \text{Me}, \text{Et}, \text{Me}_2\text{CH}, \text{Me}_3\text{C}$) were esterified with octyl and benzyl bromides in MeCN contg. I to give 87-98% yields of the corresponding benzyl and octyl alkanoates.

Keywords

esterification potassium alkanoate alkyl bromide
cryptand polymer support esterification catalyst

Index Entries

Alkyl halides
esterification of potassium alkanoates by
Carboxylic acids, reactions
esterification of potassium salts, of alkyl halides
Esterification catalysts
polymer bound cryptand, for potassium alkanoates with alkyl
halides
31250-18-7, polystyrene bound
catalysts, for esterification of potassium alkanoates by alkyl halides
100-39-0
111-83-1
esterification by, of potassium alkanoates in presence of polymer
supported cryptand catalysts
127-08-2
327-62-8
19455-20-0
19455-23-3
esterification of, by benzyl and octyl bromides in presence of
polymer supported cryptands
140-11-4
formation of, in esterification of potassium acetate by benzyl
bromide in presence of cryptand catalysts
103-28-6
109-15-9
112-14-1
122-63-4
142-60-9
2094-69-1
27751-88-8
prepn. of

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97:75531

Hydrogen production from chloroplast systems: stabilization of catalysts.

Rao, K. K.; Paterson, I. G.; Plasterk, R.; Hall, D. O. (Plant Sci. Dep., King's Coll., London SE24 9JF, UK). Photosynth., Proc. Int. Congr., 5th, Meeting Date 1980, Volume 6, 665-74. Edited by: Akoyunoglou, George. Balaban Int. Sci. Serv.: Philadelphia, Pa. (English) 1981. CODEN: 48ALA7. DOCUMENT TYPE: Conference CA Section: 52

(Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 11, 49, 74

The stability of *Clostridium pasteurianum* hydrogenase [9027-05-8] in presence of protective agents and immobilization of hydrogenase and electron mediators are reported. The H_2 evolution rate of the hydrogenase was stimulated by 10^{-2}M EDTA [60-00-4], but EDTA did not protect the enzyme from O_2 inactivation, and EDTA at high concns. also inhibited chloroplast electron transport. poly(vinyl alc.)

[9002-89-5] (0.2%) And bovine serum albumin (0.5%) protect the enzyme from O inactivation and also increase the stability of the chloroplast system. Hydrogenases were immobilized on a variety of solid supports and the immobilized enzymes were more stable than free enzymes though the specific activity of the enzymes decreased considerably during immobilization.

Keywords

hydrogen manuf water photolysis
solar energy hydrogen manuf
chloroplast hydrogenase hydrogen manuf
EDTA hydrogenase hydrogen manuf
polyvinyl alc hydrogenase stabilization
bovine albumin hydrogenase stabilization
catalyst stabilization hydrogen manuf chloroplast

Index Entries

Photolysis catalysts
bio-, for hydrogen manuf. from water, stabilization of
Albumins, blood serum
bovine, hydrogen manuf. from aq. solns. contg. hydrogenase and,
photolytic
Ferredoxins
hydrogen manuf. in systems contg. chloroplast and hydrogenase
and, effect of poly(vinyl alc.) on
Chloroplast
hydrogen manuf. in systems contg. ferredoxin and hydrogenase
and, effect of poly(vinyl alc.) on
Ion exchangers
chelating, iminodiacetate, hydrogen manuf. from aq. solns. contg.
hydrogenase and, photolytic
Energy
solar, hydrogen manuf. from water by, stabilization of catalysts for
60-00-4, preparation
9002-89-5
11139-85-8
hydrogen manuf. from aq. solns. contg. hydrogenase and, photolytic
1910-42-5
81775-44-2
hydrogen manuf. from water by immobilized hydrogenase and,
photolytic
9027-05-8
in hydrogen manuf. from water by photolysis, stabilization of
1333-74-0, preparation
manuf. of, from chloroplast systems, stabilization of catalysts for
photolytic
7732-18-5, reactions
photolysis of, hydrogen manuf. by, stabilization of catalysts for

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96:92357

Rhodium(I)-copper(II) catalyzed oxidation of 1-hexene by oxygen using immobilized, site-separated organosulfide complexes.
Nyberg, Eric D.; Drago, Russell S. (Sch. Chem. Sci., Univ. Illinois, Urbana, IL, USA). Report, TR-7; Order No. AD-A102995, 14 pp. Avail. NTIS From: Gov. Rep. Announce. Index (U. S.) 1981, 81(25), 5314 (English) 1981. DOCUMENT TYPE: Report CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 22
Silica gel-bound organosulfide (SG-SH) was reacted with $\text{Rh}(\text{CO})_2\text{SnBF}_4$ (I) to produce $(\text{m-SGS})_2\text{Rh}_2(\text{CO})_4$ (II) or $\text{SG-SRh}(\text{CO})_2\text{Sn}$ (III). III was obtained from SG-SH sample processing

site-sepd. organosulfide groups., while II require proximate sulfide groups. Both the Rh and Cu species previously reported to be necessary for the O₂ oxidn. of 1-hexene to 2-hexanone were bound to the SG-SH support, and are an effective catalytic system for this reaction. III was much more active than II. Increased lifetimes were obsd. for the SG-SH bound catalysts, relative to homogeneous analogs.

Keywords

oxidn catalyst hexene rhodium organosulfide

Index Entries

Oxidation catalysts

rhodium site-sepd. organosulfide complexes, for hexene

7440-16-6, compds.

catalysts from silica gel-bound organosulfide and, for oxidn. of hexene

592-41-6, reactions

oxidn. of, rhodium site-sepd. organosulfide complexes for catalysts in

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108:229408

Cobalt water oxidation catalyst immobilized on membranes of lipid vesicles.

Gerasimov, O. V.; Lymar, S. V.; Tsvetkov, T. M.; Parmon, V. N. (Inst. Catal., Novosibirsk 630090, USSR). React. Kinet. Catal. Lett., 36(1), 145-9 (English) 1988. CODEN: RKCLAU. ISSN: 0304-4122.

DOCUMENT TYPE: Journal CA Section: 74 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes) Section cross-reference(s): 67

An effective H₂O oxidn. catalyst supported on lipid membranes was formed photocatalytically in solns. contg. Ru(bpy)₃²⁺

[bpy=(2,2'-bipyridine)], S₂O₈²⁻, Coaq²⁺, and dipalmitoyllecithin vesicles.

Keywords

water oxidn catalyst cobalt lipid supported

photooxidn water catalyst nickel lipid

photolysis water oxidn catalyst generation

Index Entries

Oxidation catalysts

cobalt immobilized on membranes of lipid vesicles, for water, photochem. prepn. of

Lecithins

cobalt water oxidn. catalyst immobilized on membranes of vesicles of, photochem. prepn. of

Oxidation catalysts

photochem., cobalt immobilized on membranes of lipid vesicles as, for water, photochem. prepn. of

2644-64-6

catalyst for water oxidn. from cobalt immobilized on membranes of vesicles of, photocatalytic prepn. of

7782-44-7, preparation

formation of, in photochem. and dark oxidn. of water, photochem. prepn. of cobalt catalyst immobilized on lipid vesicles for

7732-18-5, reactions

oxidn. of, dark and photochem., photochem. prepn. of cobalt catalyst immobilized on lipid vesicles for

15158-62-0

photolysis of system contg. cobalt(2+) and persulfate and lipid vesicles and, formation of water oxidn. catalyst in 7727-21-1

photolysis of system contg. tris(bipyridine)ruthenium(2+) and cobalt(2+) and lipid vesicles and, formation of water oxidn. catalyst in 1330-43-4

7447-40-7, reactions

photolysis of system contg. tris(bipyridine)ruthenium(2+) and nickel(2+) and persulfate and lipid vesicles and, prepn. of water oxidn. catalyst in

7646-79-9, reactions

photolysis of system contg. tris(bipyridine)ruthenium(2+) and persulfate and lipid vesicles and, prepn. of water oxidn. catalyst in

18955-01-6

reactions of, in dark and photochem. water oxidn. systems, photochem. prepn. of cobalt immobilized on lipid vesicles as catalyst for

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115:121089

Catalytic activity of hemin immobilized in polymeric matrixes.

Potapov, G. P.; Alieva, M. I.; Imshenik, V. K. (Syktyvkar. Gos. Univ., Syktyvkar, USSR). Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol., 34(2), 80-4 (Russian) 1991. CODEN: IVUKAR. ISSN: 0579-2991.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 38

The catalytic activity of Fe-porphyrin covalently bonded to polyacrylamide gel during the oxidn. of cysteine or Na₂S by O₂ was studied. The activity of the complex exceeds the catalytic activities of Fe-porphyrin complexes coordinatively bonded to polymers contg. different functional groups. The polymer gel-immobilized Fe-porphyrin is not washed out into the soln. and can be reused many times.

Keywords

polyacrylamide gel immobilized iron porphyrin catalyst
cysteine oxidn immobilized hemin catalyst
sulfide oxidn immobilized hemin catalyst

Index Entries

Oxidation catalysts

iron-porphyrin, immobilized in polyacrylamide gel

Kinetics of oxidation

of cysteine and sodium sulfide, on hemin catalyst immobilized in polyacrylamide gel

Porphyrins

iron complexes, catalyst, immobilized in polyacrylamide gels

7439-89-6, porphyrin complexes

catalyst, immobilized in polyacrylamide gels

9003-05-8

catalyst, iron porphyrin complex immobilized in gel of, for oxidn.

16009-13-5

catalytic activity of, immobilized in polyacrylamide gel

52-90-4, reactions

1313-82-2, reactions

oxidn. of, on iron porphyrin catalyst immobilized in polyacrylamide gel

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115:50282

Enzymatic reactions in aqueous-organic media. Amino acid esterification and peptide synthesis by α -chymotrypsin entrapped in poly(vinyl alcohol) films.
 Watanabe, Akira; Noritomi, Hidetaka; Nagashima, Toru; Kise, Hideo (Inst. Mater. Sci., Univ. Tsukuba, Ibaraki 305, Japan). Kobunshi Ronbunshu, 48(4), 247-51 (Japanese) 1991. CODEN: KBRBA3.
 ISSN: 0386-2186. DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 7, 9
 Esterification of N-acetyl-L-tyrosine and peptide synthesis from N-acetyl-L-tyrosine Et ester and glycineamide in hydrophilic org. solvents were studied by using free α -chymotrypsin and chymotrypsin entrapped in poly(vinyl alc.) (PVA) films as catalysts. The reaction rates and the product yields were strongly dependent on the water concn. in the reaction systems. At water concns. below 10%, both the free and immobilized enzymes were highly active for the synthetic reactions, while under anhyd. conditions, the enzymes were totally inactive. By immobilization to PVA films, the value of K_m increased, but the second order reaction rate (k_{cat}/K_m) was the same as that of the free enzyme. The PVA-immobilized chymotrypsin exhibited stable catalytic activity for the peptide synthesis in acetonitrile for more than 7 days.

Keywords

chymotrypsin immobilized polyvinyl alc catalyst
 esterification amino acid immobilized chymotrypsin
 kinetics enzymic immobilized chymotrypsin

Index Entries

Esterification
 of acetyltyrosine in presence of chymotrypsin immobilized on poly(vinyl alc.)
 Kinetics, enzymic
 of chymotrypsin immobilized on poly(vinyl alc.)
 Solvent effect
 on peptide synthesis catalyzed by chymotrypsin immobilized on poly(vinyl alc.)
 Peptides, preparation
 prepn. of, chymotrypsin immobilized on poly(vinyl alc.) as catalyst for
 9002-89-5
 chymotrypsin immobilized on, as catalyst for amino acid esterification and peptide synthesis
 537-55-3
 esterification of, chymotrypsin immobilized on poly(vinyl alc.) as catalyst for
 9004-07-3
 immobilized on poly(vinyl alc.), catalyst, for amino acid esterification and peptide synthesis
 840-97-1
 peptide coupling of, with glycineamide, chymotrypsin immobilized on poly(vinyl alc.) as catalyst for
 1668-10-6
 peptide coupling of, with tyrosine ester, chymotrypsin immobilized on poly(vinyl alc.) as catalyst for

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111:173378

The investigation of catalytic activity of metal complexes fixed on solid supports. 6. Reduction of nitrobenzene and some of its halo derivatives by chemically bonded hydrogen in the presence of immobilized rhodium complexes.
 Sharf, V. Z.; Dovganyuk, V. F.; Isaeva, V. I.; Maksimov, B. I. (Inst. Org.

Khim. im. Zelinskogo, Moscow, USSR). Izv. Akad. Nauk SSSR, Ser. Khim., (3), 534-9 (Russian) 1989. CODEN: IASKA6. ISSN: 0002-3353. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 67
Rh complexes immobilized on amino- or aminophosphine-modified silica gel catalyzed the H-transfer redn. of PhNO₂ to PhNH (from Me₂CHOH) in the presence of KOH promoter. The same complexes catalyzed the redn. with NaBH₄ as the hydride donor, in Me₂CHOH soln. Mechanistic expts. on the redn. of alkoxybenzene and hydratobenzene under the catalytic conditions indicated that PhNO₂ and its partial redn. products remain in the Rh coordination sphere until complete conversion of -NO₂ into -NH₂. Selective redn. of RC₆H₄NO₂ (R = p- and m-Cl, p-Br) to the haloaniline (in quant. yields) was obsd.

Keywords

hydrogen transfer redn nitrobenzene catalytic
rhodium complex immobilized redn catalyst
propanol redn nitrobenzene immobilized rhodium
borohydride redn nitrobenzene immobilized rhodium
regiochem redn halonitrobenzene

Index Entries

Kinetics of hydrogen transfer
reductive, of nitrobenzene with propanol and sodium borohydride in presence of rhodium complexes immobilized on silica gel
Hydrogen transfer
reductive, of nitrobenzene with propanol and sodium borohydride in presence of rhodium complexes immobilized on silica gel,
mechanism of
Hydrogen transfer catalysts
reductive, rhodium complexes immobilized on amino- and aminophosphine-modified silica gel, for nitrobenzene with propanol and sodium borohydride
Kinetics of reduction
regioselective, of halonitrobenzenes with sodium borohydride in presence of rhodium complex immobilized on silica gel
Reduction
regioselective, of halonitrobenzenes with sodium borohydride in presence of rhodium complex immobilized on silica gel,
mechanism of
Reduction catalysts
regioselective, rhodium complex immobilized on aminophosphine-modified silica gel, for halonitrobenzenes with sodium borohydride
12092-47-6, aminophosphine-modified silica gel complex catalyst, for hydrogen-transfer redn. of nitrobenzene and its halo derivs. with propanol and sodium borohydride
10049-07-7, amino-modified silica gel complex
10049-07-7, aminophosphine-modified silica gel complex
12092-47-6, amino-modified silica gel complex
14694-95-2, amino-modified silica gel complex
14694-95-2, aminophosphine-modified silica gel complex catalyst, for hydrogen-transfer redn. of nitrobenzene with propanol and sodium borohydride
1333-74-0, unspecified
hydrogen transfer, reductive, of nitrobenzene with propanol and sodium borohydride in presence of rhodium complexes immobilized on silica gel, mechanism of
16940-66-2
67-63-0, reactions
hydrogen-transfer redn. of nitrobenzene with, in presence of rhodium complexes immobilized on silica gel, kinetics and mechanism of

98-95-3, reactions

hydrogen-transfer redn. of, with propanol and sodium borohydride
in presence of rhodium complexes immobilized on silica
gel, kinetics and mechanism of

88-73-3

redn. of, with sodium borohydride in presence of rhodium complex
immobilized on silica gel, kinetics of

106-38-7

redn. of, with sodium borohydride in presence of rhodium complex
immobilized on silica gel, mechanism of

100-00-5

121-73-3

586-78-7

regioselective redn. of, with sodium borohydride in presence of
rhodium complex immobilized on silica gel, kinetics and
mechanism of

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115:88614

Immobilized catalyst for detecting chemiluminescence in lipid
hydroperoxide.

Wadano, Akira; Ikeda, Teturo; Matumoto, Motonobu; Himeno, Michio
(Coll. Agric., Univ. Osaka Prefect., Sakai 591, Japan). Agric. Biol.
Chem., 55(5), 1217-23 (English) 1991. CODEN: ABCHA6. ISSN:
0002-1369. DOCUMENT TYPE: Journal CA Section: 9 (Biochemical
Methods) Section cross-reference(s): 80

Both microperoxidase and cytochrome c could be immobilized on a gel
for HPLC without losing their activity, the specificity of each
immobilized catalyst being similar to that of the free catalyst. With up to
40% MeOH, the chemiluminescence increased as the MeOH concn.
increased. while the count decreased with >10% MeOH for the free
cytochrome c. When used as the reactant for flow-injection anal., they
do not need to occupy the cell for the emission of chemiluminescence.
The immobilized reactant can measure 400 pmol-10 nmol of
tert-butylhydroperoxide without staining the emission cell.

Keywords

lipid hydroperoxide detn immobilized catalyst
chemiluminescence lipid hydroperoxide detn
microperoxidase immobilized chemiluminescence detection
cytochrome c immobilized chemiluminescence detection

Index Entries

Immobilization, biochemical
of catalyst, for chemiluminescence detn. of liq. hydroperoxide
Spectrochemical analysis
chemiluminescence, for lipid hydroperoxides, immobilized
catalyst in
Lipids, analysis
hydroperoxy, detn. of, by chemiluminescence with immobilized
catalyst
Hydroperoxides
lipid, detn. of, by chemiluminescence with immobilized catalyst
119757-98-1
128605-18-5
135375-49-4
135375-50-7
catalyst immobilization on, for chemiluminescence detn. of lipid
hydroperoxides
75-91-2
detn. of, by chemiluminescence with immobilized catalyst
9007-43-6, analysis

immobilization of, on chromatog. gels, for chemiluminescence detn.
of lipid hydroperoxides
67-56-1, biological studies
immobilized catalyst activity response to, in chemiluminescence
detn. of lipid hydroperoxide
60-33-3, reactions
peroxidn. of
23017-93-8
prepn. and detn. of

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115:9311

Peptide synthesis catalyzed by papain immobilized on polymer supports: effect of the macromolecular structure and reaction conditions on synthesis.
Jayakumari, V. G.; Pillai, V. N. Rajasekharan (Sch. Chem. Sci., Mahatma Gandhi Univ., Kottayam 686 631, India). Proc. - Indian Acad. Sci., Chem. Sci., 103(2), 133-48 (English) 1991. CODEN: PIAADM. ISSN: 0253-4134. DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 9, 35
Papain immobilized on different types of polymeric supports was used for the synthesis of peptides in aq.-org. solvent mixts. The effects of the polymer support, degree of crosslinking, nature and length of the spacer grouping between the polymer backbone and the point of attachment of the enzyme, and reaction conditions like pH, concn. of nucleophile and the immobilized enzyme content on the course of the synthesis were investigated. Divinylbenzene-crosslinked polystyrene, divinylbenzene-crosslinked polyacrylamide, and N,N'-methylenebisacrylamide-crosslinked polyacrylamide systems immobilized with papain were used for these studies. An increase in the length of the spacer arm and an increase in hydrophilicity invariably resulted in an increase in the yield of the peptide synthesis. Papain immobilized on polystyrene-polyethylene glycol supports and tetraethylene glycol-crosslinked polystyrene supports were more efficient in effecting peptide synthesis when compared to other polystyrene-based supports.

Keywords

polymer bound papain peptide coupling catalyst
amidation catalyst immobilized papain

Index Entries

Polymer-supported reagents
papain, for peptide coupling reactions
Amidation catalysts
peptide coupling, papain immobilized on polymer supports
Amidation
peptide coupling, papain immobilized on polymer supports as catalysts for
9001-73-4
immobilized on polymer supports, catalyst, for peptide coupling reactions
543-24-8
13734-41-3
peptide coupling of, with glycine ester, immobilized
papain-catalyzed
2488-15-5
15761-38-3
peptide coupling of, with phenylalanine ester, immobilized
papain-catalyzed
13734-34-4
peptide coupling of, with tripeptide amide, immobilized

papain-catalyzed
 459-73-4
 7524-50-7
 13139-15-6
 16120-92-6
 peptide coupling reactions of, immobilized papain-catalyzed
 4530-20-5
 peptide-coupling reactions of, immobilized papain-catalyzed
 2280-68-4
 prepn. and sequential deblocking and peptide coupling of, with
 glycine deriv., immobilized papain-catalyzed
 3235-59-4
 prepn. and sequential deblocking and peptide coupling of, with
 phenylalanine deriv., immobilized papain-catalyzed
 9003-70-7, carboxymethylated, reaction products with papain and
 aminomethylated, reaction products with glutaric anhydride and papain
 25034-58-6, reaction products with ethylenediamine, glutaric
 anhydride, and papain
 61722-10-9, reaction products with ethylene diamine, glutaric
 anhydride, and papain
 66787-35-7, aminomethylated, reaction products with glutaric
 anhydride and papain
 125928-34-9, reaction products with papain
 prepn. of, as catalyst for peptide coupling reactions
 2280-66-2
 3757-98-0
 4526-92-5
 5874-73-7
 41889-06-9
 63473-46-1
 73148-98-8
 prepn. of, immobilized papain catalyst for

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112:20573

High activity in displacement reactions catalyzed by quaternary onium
 salts immobilized on inorganic matrices.

Tundo, Pietro; Badiali, Marcello (Ist. Chim. Ind., Univ. Messina, Messina
 98010, Italy). React. Polym., 10(1), 55-65 (English) 1989. CODEN:

REPLEN. DOCUMENT TYPE: Journal CA Section: 22 (Physical
 Organic Chemistry)

High nucleophilic activity in displacement reactions by Br⁻, I⁻ and SCN⁻
 with n-octyl methanesulfonate is obsd. when these anions are paired
 with bulky onium salts immobilized on inorg. matrixes (silica gel and
 alumina). The reactions follow second-order kinetics; the obsd. rate
 consts. depend on the matrix (alumina > silica gel), on the nature of the
 alkyl chains bonded to the quaternary atoms and to the support, on the
 anion, and on the solvent used in the reaction (n-heptane > toluene >
 chlorobenzene). The obsd. reaction rates are in some cases higher by
 more than an order of magnitude than the same reactions carried out in
 a homogeneous phase in the presence of strong anion activators
 [lipophilic onium salts and lipophilic [2.2.2]-cryptands]. This dramatic
 increase is due both to anion activation and to adsorption of the
 substrate by the inorg. matrix. In spite of this high activity, the reaction
 microenvironment is polar, as shown by comparative reactivity of the
 anions (I⁻ > SCN⁻ > Br⁻) and by high C-alkylation of ambident anions
 (phenoxide and b-naphthoxide).

Keywords

displacement reaction immobilized onium salt
 substitution catalyst immobilized onium salt
 quaternary onium salt substitution catalyst
 octyl methanesulfonate substitution catalyst kinetics

alkyl group substitution catalyst kinetics
 solvent effect substitution immobilized catalyst
 anion activation substitution immobilized catalyst

Index Entries

Onium compounds

catalysts for substitution reactions, effect of immobilization on
 Substitution reaction catalysts

immobilized quaternary onium salts, for octyl methanesulfonate
 reactions

Alkylation catalysts

immobilized quaternary onium salts, for phenol and naphthol

Substitution reaction, nucleophilic

of octyl methanesulfonate, immobilized onium salt-catalyzed

Kinetics of substitution reaction

of octyl methanesulfonate, with bromide, iodide, and thiocyanate,
 catalytic

Alkylation

of phenol and naphthol, catalytic

Solvent effect

on octyl methanesulfonate substitution kinetics, with immobilized
 onium salt catalysts

Polymer-supported reagents

phase-transfer catalysts, onium salts on silica and alumina, for
 substitution of octyl methanesulfonate

100-39-0

alkylation of phenol and naphthol by, with immobilized onium salt
 catalysts

135-19-3, reactions

139-02-6

alkylation of, by benzyl bromide, with immobilized onium salt
 catalysts

14937-45-2

catalysts, for substitution of phenol

93790-44-4, silica-supported

99045-50-8, silica or alumina-supported

catalytic substitution of octyl methanesulfonate, and alkylation of
 phenol and naphthol with

4905-83-3, silica-supported

14488-45-0, silica-supported

80617-03-4, silica-supported

97412-97-0, silica or alumina-supported

124412-07-3, silica-supported

kinetics of catalytic substitution of octyl methanesulfonate with

7681-11-0, uses and miscellaneous

7758-02-3, uses and miscellaneous

phase-transfer catalysts, silica or alumina-supported, for

substitution of octylmethane sulfonate

16156-52-8

substitution reactions of, with anions, kinetics and mechanism of
 immobilized onium salt-catalyzed

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111:203874

Electrochemical carbon-skeleton rearrangements catalyzed by
 hydrophobic vitamin B12 immobilized in a polymer-coated
 electrode.

Murakami, Yukito; Hisaeda, Yoshio; Ozaki, Toshiaki; Matsuda,
 Yoshihisa (Fac. Eng., Kyushu Univ., Fukuoka 812, Japan). J. Chem.
 Soc., Chem. Commun., (16), 1094-6 (English) 1989. CODEN:

JCCCAT. ISSN: 0022-4936. DOCUMENT TYPE: Journal CA Section:

72 (Electrochemistry) Section cross-reference(s): 22, 23

A glassy C electrode was coated with a polymer species derived from

a hydrophobic vitamin B12 and Araldite CT-200, and the immobilized Co complex catalyzed the electrochem. C-skeleton rearrangements of alkyl halides having electron-withdrawing groups.

Keywords

alkyl bromide electroredn rearrangement modified electrode
cobalt complex polymer coating electrochem rearrangement
vitamin B12 deriv polymer modified electrode
Araldite CT200 immobilized cobalt complex electrode
catalyst electrochem rearrangement cobalt complex

Index Entries

Rearrangement catalysts

electrochem., polymer coating with immobilized hydrophobic
vitamin B12 deriv., on carbon, for alkyl halides with
electron-withdrawing groups

Reduction, electrochemical

of bromobis(ethoxycarbonyl)propane or
bromocyanyl(ethoxycarbonyl)propane or
acetylbromo(ethoxycarbonyl)propane on carbon electrode
modified with polymer coating with immobilized
hydrophobic vitamin B12, rearrangements in

Electrodes

polymer-coated carbon, with immobilized hydrophobic vitamin B12
deriv.

Alkyl bromides

with electron-withdrawing groups, redn. of, electrochem., on carbon
electrode coated with polymer with immobilized
hydrophobic vitamin B12, carbon-skeleton rearrangements
catalysts in relation to

Rearrangement

electrochem., in redn. of alkyl halides with electron-withdrawing
groups on carbon modified with polymer coating with
immobilized hydrophobic vitamins B12 deriv.

Debromination

reductive, electrochem., of alkyl bromide with electron-withdrawing
groups on carbon with polymer coating with immobilized
vitamin B12 deriv., carbon-skeleton rearrangements in
relation to

123467-03-8, reaction product with Araldite CT 200
carbon electrode coated with, electrochem. redn. with
carbon-skeleton rearrangement of

bromo-bis(ethoxycarbonyl)propane or

bromocyano(ethoxycarbonyl)propane or acetyl

bromo(ethoxycarbonyl)propane on, in DMF

25085-99-8, reaction products with hydrophobic vitamin B12 deriv.

carbon electrode modified with, carbon-skeleton rearrangements

catalyzed by, in electrochem. redn. of alkyl halides with

electron-withdrawing groups

7726-95-6, unspecified

debromination, reductive, electrochem., of alkyl bromide with

electron-withdrawing groups on carbon with polymer

coating with immobilized vitamin B12 deriv.,

carbon-skeleton rearrangements in relation to

7440-44-0, oxidized reaction products with Araldite CT 200 and

hydrophobic vitamin B12 deriv. reaction product

electrode, electrochem. carbon-skeleton rearrangements catalyzed

by, in electrochem. redn. of alkyl halides with

electron-withdrawing groups

1619-62-1

formation of, by electrochem. redn. of

bromo-bis(ethoxycarbonyl)propane on carbon electrode

modified with polymer coating with immobilized

hydrophobic vitamin B12, carbon-skeleton rearrangements
in relation to
1572-98-1
109539-56-2
formation of, by electrochem. redn. of
bromocyano(ethoxycarbonyl)propane on carbon electrode
modified by polymer with immobilized hydrophobic vitamin
B12, carbon-skeleton rearrangement in relation to
55424-74-3
formation of, in electrochem. redn. of
acetylbromo(ethoxycarbonyl)propane on carbon modified
with polymer coating with hydrophobic immobilized
vitamin B12, carbon-skeleton rearrangement in relation to
4749-12-6
prepn. of by electrochem. redn. of
acetylbromo(ethoxycarbonyl)propane on carbon electrode
coated with polymer with immobilized hydrophobic vitamin
B12, carbon-skeleton rearrangement in relation to
597-04-6
prepn. of, by electrochem. redn. of
acetylbromo(ethoxycarbonyl)propane on carbon electrode
coated with polymer with immobilized hydrophobic vitamin
B12, carbon-skelton rearrangement in relation to
4676-51-1
prepn. of, by electrochem. redn. of
bromo-bis(ethoxycarbonyl)propane on carbon electrode
modified with polymer coating with immobilized
hydrophobic vitamin B12, carbon-skeleton rearrangements
in relation to
22584-00-5
prepn. of, by electrochem. redn. of
bromocyano(ethoxycarbonyl)propane on carbon electrode
modified with polymer coating with immobilized
hydrophobic vitamin B12, carbon-skeleton rearrangements
in relation to
75511-41-0
107987-07-5
109539-54-0
redn. of, electrochem., on carbon electrode modified with polymer
coating with immobilized hydrophobic vitamin B12,
carbon-skeleton rearrangement catalysis in relation to

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111:172515
Enzyme-catalyzed oxidation of alcohols to organic acids.
Kato, Nobuo (Mitsubishi Kasei Corp., Japan). Jpn. Kokai Tokkyo
Koho JP 01086885 A2 31 Mar 1989 Heisei, 5 pp. (Japan) CODEN:
JKXXAF. CLASS: ICM: C12P007-40. ICS: C12N011-08.
APPLICATION: JP 87-246953 30 Sep 1987. DOCUMENT TYPE:
Patent CA Section: 16 (Fermentation and Bioindustrial Chemistry)

Monohydric alcs. are oxidized to the corresponding org. acids by a
stream of O in the presence of alc. oxidase, catalase, and aldehyde
dismutase or bacterial strains producing these enzymes immobilized
on polyurethanes I (a = 80-95 mol%; b = 5-20 mol%). Thus, 100mM
MeOH was stirred with a catalyst composed of alc. oxidase 2, catalase
0.25, and aldehyde dismutase 1 mg immobilized on 0.5 g I (a = 91
mol%, b = 9 mol%) with mol. wt. of the diol portion 2672 at 30° and pH
7.5 with passage of 2.5 mL O/min for 60 h to produce 37.5 mM
HCO₂H.

Keywords

alc oxidn oxygen enzyme

carboxylic acid manuf enzyme
oxidase alc manuf carboxylic acid
catalase manuf carboxylic acid
aldehyde dismutase manuf carboxylic acid
enzyme immobilization polyurethane oxidn catalyst

Index Entries

Hansenula polymorpha
alc. oxidase and catalase from, immobilized on polyurethanes,
oxidn. of alcs. to acids by
Pseudomonas putida
aldehyde dismutase from, immobilized on polyurethanes, oxidn. of
alcs. to acids by
Oxidation catalysts
enzymes immobilized on polyurethanes, for monohydric alcs.
Immobilization, biochemical
of Hansenula polymorpha and Pseudomonas putida on
polyurethanes, oxidn. of alcs. to acids by
Alcohols, reactions
oxidn. of, with oxygen, carboxylic acids from, immobilized
enzyme-catalyzed
Carboxylic acids, preparation
prepn. of, by oxidn. of alcs., immobilized enzyme-catalyzed
Urethane polymers, uses and miscellaneous
polyether-, isocyanato-contg., enzymes immobilized on, oxidn. of
alcs. to acids by
9001-05-2
9073-63-6
85204-94-0
immobilization of, on polyurethanes, oxidn. of alcs. to acids with
64-17-5, biological studies
oxidn. of, to acetic acid, with oxygen, catalyzed by enzymes
immobilized on polyurethanes
107-18-6, biological studies
oxidn. of, to acrylic acid, with oxygen, catalyzed by enzymes
immobilized on polyurethanes
71-36-3, biological studies
oxidn. of, to butyric acid, with oxygen, catalyzed by enzymes
immobilized on polyurethanes
67-56-1, biological studies
oxidn. of, to formic acid, with oxygen, catalyzed by enzymes
immobilized on polyurethanes
71-23-8, biological studies
oxidn. of, to propionic acid, with oxygen, catalyzed by enzymes
immobilized on polyurethanes
7782-44-7, biological studies
oxidn. with, of alcs., immobilized enzyme-catalyzed
79-10-7, preparation
prepn. of, by oxidn. of allyl alc., immobilized enzyme-catalyzed
107-92-6, preparation
prepn. of, by oxidn. of butanol, immobilized enzyme-catalyzed
64-19-7, preparation
prepn. of, by oxidn. of ethanol, immobilized enzyme-catalyzed
79-09-4, preparation
prepn. of, by oxidn. of isopropanol, immobilized enzyme-catalyzed
64-18-6, preparation
prepn. of, by oxidn. of methanol, immobilized enzyme-catalyzed

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115:185723

Synthesis of esters by lipase immobilized on poly(vinyl
alcohol)-poly(ethyleneimine) copolymers in organic solvents.
Ikeda, Isao; Sato, Issei; Suzuki, Kimihiro (Fac. Eng., Fukui Univ., Fukui

910, Japan). Sen'i Gakkaishi, 47(4), 198-202 (English) 1991.
 CODEN: SENGAS. ISSN: 0037-9875. DOCUMENT TYPE: Journal
 CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and
 Waxes) Section cross-reference(s): 16, 23, 35, 38, 67
 The synthesis of lauric esters of mono- and polyhydric alcs. was studied
 in org. solvents using lipase from Candida cylindracea immobilized on
 poly(vinyl alc.)-co-polyethylenimine gels. The synthesis of hexyl laurate
 (I) increased with increasing water content in the reaction system and
 levelled off at >3%. A similar result was obtained with wet-treated
 immobilized lipase. The synthesis of I in isooctane gave the highest
 conversion and rate of esterification among the org. solvents used.
 Fifty units of lipase was necessary to achieve the almost quant.
 esterification in 22 h. Lauric esters of polyhydric alcs., such as glycerol,
 ethylene glycol, and 1,3-butanediol, were similarly synthesized with a
 relatively high conversion in isooctane. The prepd. esters were
 characterized by gel permeation chromatog.

Keywords

polymer immobilized lipase esterification catalyst
 laurate ester prepn org solvent

Index Entries

Esterification catalysts
 lipase immobilized on poly(vinyl alc.)-polyethylenimine, for lauric
 acid in org. solvents
 Immobilization, biochemical
 of lipase to poly(vinyl alc.)-polyethylenimine, esterification catalyst
 prepn. by
 Esters, preparation
 prepn. of, with polymer-immobilized lipase esterification catalyst
 in org. solvents
 111-30-8, reaction products with bromoacetaldehyde di-Et
 acetal-poly(vinyl alc.)-polyethylenimine reaction products and lipase
 2032-35-1, reaction products with poly(vinyl alc.), polyethylenimine,
 glutaraldehyde and lipase
 9001-62-1, condensation products with poly(vinyl alc.)-polyethylenimine
 gels
 9002-89-5, reaction products with bromoacetaldehyde di-Et acetal,
 polyethylenimine, glutaraldehyde and lipase
 catalysts, for esterification of lauric acid with hexanol and polyhydric
 alcs. in org. solvents
 7732-18-5, uses and miscellaneous
 effect of, on esterification of hexanol with lauric acid in org. solvents
 in presence of polymer-immobilized lipase catalyst
 143-07-7, reactions
 esterification of, polymer-immobilized catalysts for
 56-81-5, reactions
 107-21-1, reactions
 107-88-0
 111-27-3, reactions
 esterification of, with lauric acid, in org. solvents,
 polymer-immobilized lipase catalyst for
 538-24-9
 624-04-4
 4196-73-0
 27215-38-9
 27638-00-2
 68795-65-3
 prepn. of, in org. solvents, polymer-immobilized lipase
 esterification catalyst for
 34316-64-8
 prepn. of, polymer-immobilized catalysts for
 71-43-2, uses and miscellaneous

108-88-3, uses and miscellaneous
 142-82-5, uses and miscellaneous
 540-84-1
 solvents, for prepn. of hexyl laurate in presence of
 polymer-immobilized lipase esterification catalysts

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110:74581

Catalytic activity of some immobilized dirhodium complexes with one bridging thiolato and one bridging chloro ligand.

Eisen, Moris; Bernstein, Tamar; Blum, Jochanan; Schumann, Herbert
 (Dep. Org. Chem., Hebrew Univ., Jerusalem 91904, Israel). J. Mol.
 Catal., 43(2), 199-212 (English) 1987. CODEN: JMCADS. ISSN:
 0304-5102. DOCUMENT TYPE: Journal CA Section: 22 (Physical
 Organic Chemistry) Section cross-reference(s): 67

Several

m-thiolato-m-chlorodicarbonylbis(tri-tert-butylphosphine)dirhodium
 complexes were anchored (a) to diphenylphosphinated crosslinked
 polystyrene by phosphine ligand exchange, (b) to chloromethylated
 polystyrene resin by substitution of the benzylic halogen via the
 m-thiolato group, and (c) to silica and alumina via a sulfur-attached
 CH₂CH₂SiO₃ bridge. The catalytic activity of the various immobilized
 dirhodium complexes in allylic isomerization, hydrogenation, and
 hydroformylation processes were investigated. Some mechanistic
 features of these catalyzes are discussed.

Keywords

rhodium polymer anchored catalyst
 isomerization rhodium polymer anchored catalyst
 hydrogenation rhodium polymer anchored catalyst
 hydroformylation polymer anchored catalyst

Index Entries

Polymer-supported reagents
 immobilized dirhodium catalysts, for isomerization of allylbenzene
 or for hydrogenation or hydroformylation of cyclohexene
 Isomerization catalysts
 immobilized dirhodium complexes, for allylbenzene
 Hydroformylation catalysts
 Hydrogenation catalysts
 immobilized dirhodium complexes, for cyclohexene
 Isotope effect
 in hydrogenation, of cyclohexene over immobilized dirhodium
 complexes, by deuterium
 Kinetics of hydrogenation
 of cyclohexene over immobilized dirhodium complexes
 Hydrogenation
 of cyclohexene over immobilized dirhodium complexes,
 mechanism of
 118760-29-5
 118760-30-8
 catalysts, for hydrogenation for cyclohexene
 118760-28-4, silica- or alumina-supported
 catalysts, for isomerization of allylbenzene or for hydrogenation or
 hydroformylation of cyclohexene
 110-83-8, reactions
 hydrogenation or hydroformylation of, immobilized catalysts for
 1333-74-0, unspecified
 hydrogenation, of cyclohexene over immobilized dirhodium
 complexes, mechanism of
 300-57-2
 isomerization of, catalysts for

7782-39-0, properties
 isotope effect of, for hydrogenation of cyclohexene over
 immobilized catalysts
 118709-77-6, polymer-bound
 118709-78-7, polymer-bound
 118709-79-8, polymer-bound
 118709-80-1, polymer-bound
 118709-81-2, polymer-bound
 prepn. and catalytic activity of, for isomerization of allylbenzene or
 for hydrogenation or hydroformylation of cyclohexene
 766-90-5
 873-66-5
 prepn. of, by catalytic isomerization of allylbenzene
 2043-61-0
 prepn. of, by hydroformylation of cyclohexene over immobilized
 catalysts
 110-82-7, preparation
 prepn. of, by isomerization of cyclohexene over immobilized
 catalysts

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111:232170
 Catalytic activity of metal complexes fixed on solid supports. 8.
 Immobilized rhodium and palladium complexes in the
 dehalogenation of halo derivatives of benzene and cyclopropane by
 hydrogen transfer from alcohols and sodium borohydride.
 Dovganyuk, V. F.; Sharf, V. Z.; Saginova, L. G.; Antokol'skaya, I. I.;
 Bol'shakova, L. I. (Inst. Org. Khim. im. Zelinskogo, Moscow, USSR).
 Izv. Akad. Nauk SSSR, Ser. Khim., (4), 777-82 (Russian) 1989.
 CODEN: IASKA6. ISSN: 0002-3353. DOCUMENT TYPE: Journal CA
 Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid
 Compounds) Section cross-reference(s): 24, 67

Rhodium and palladium complexes, immobilized on amino and
 aminophosphorylated silica gel or polymers contg. heterocyclic amine
 groups, catalyzed the hydrodehalogenation of p-bromotoluene and
 gem-dihalocyclopropanes I (R = H, Me; R1 = Ph, p-tolyl; X = Cl, Br) and
 II by hydrogen transfer from 2-propanol and NaBH4. Use of NaBH4
 results in replacement of both halogen atoms. The rate and
 stereoselectivity of the reaction depends on the nature and location of
 the substituents on the cyclopropane ring.

Keywords

cyclopropane dihalo hydrodehalogenation catalyst
 hydrodehalogenation bromotoluene halocyclopropane catalyst
 toluene bromo hydrodehalogenation catalyst
 catalyst rhodium palladium hydrodehalogenation
 hydrogen transfer borohydride isopropyl alc

Index Entries

Dehalogenation catalysts
 immobilized rhodium or polyethyl complexes, for bromotoluene or
 dihalocyclohexanes, by hydrogen transfer from alcs. and
 sodium borohydride
 Hydrogen transfer
 in dehalogenation of bromotoluene and dihalocyclopropanes on
 immobilized rhodium and palladium complexes
 106-38-7
 hydrodebromination of, immobilized catalyst for
 823-69-8
 2415-80-7
 3234-51-3

3591-42-2
 17343-73-6
 17650-99-6
 61693-47-8
 hydrodehalogenation of, catalysts for
 1333-74-0, unspecified
 hydrogen transfer, in dehalogenation of bromotoluene and
 dihalocyclopropanes on immobilized rhodium and
 palladium complexes
 10049-07-7
 12092-47-6
 13820-53-6
 immobilized catalyst contg., for hydrodehalogenation of
 bromotoluene or dihalocyclopropanes, by hydrogen transfer
 14694-95-2
 immobilized catalyst for hydrodehalogenation of dicyclopropanes
 by hydrogen transfer
 873-49-4
 2214-14-4
 17651-00-2
 18688-21-6
 18688-22-7
 32523-76-5
 32523-77-6
 69912-50-1
 123745-49-3
 123745-50-6
 prepn. of
 108-88-3, preparation
 prepn. of, by catalytic redn. of bromo deriv.
 16940-66-2
 redn. by, of bromotoluene and dihalocyclopropanes
 67-63-0, preparation
 transfer of hydrogen from, to bromotoluene or dihalocyclopropanes

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111:39600
 Alcohol oxidation with tert-butyl hydroperoxide in the presence of
 tetrabromooxomolybdate immobilized on silane coupling
 reagent-modified silica.
 Kurusu, Yasuhiko; Masuyama, Yoshiro (Fac. Sci. Technol., Sophia
 Univ., Tokyo 102, Japan). J. Polym. Sci., Part C: Polym. Lett., 27(2),
 79-82 (English) 1989. CODEN: JSCLE2. ISSN: 0887-6258.
 DOCUMENT TYPE: Journal CA Section: 30 (Terpenes and
 Terpenoids)
 The following catalysts were tested in the oxidn. of borneol-isoborneol
 and menthol-isomenthol-neomenthol mixts.: (1) pyridinium
 tetrabromooxomolybdate, (2) tetrabromooxomolybdate immobilized on
 dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium
 chloride-modified silica, and (3) tetrabromooxomolybdate immobilized
 on poly(4-vinylpyridine). The first 2 catalysts showed greater activity
 and selectivity.

Keywords

oxidn terpene alc immobilized tetrabromooxomolybdate
 silica tetrabromooxomolybdate oxidn alc
 polyvinylpyridine tetrabromooxomolybdate oxidn alc
 molybdate tetrabromooxo immobilized oxidn catalyst
 hydroperoxide oxidn alc immobilized catalyst

Index Entries

Oxidation catalysts

tetrabromooxomolybdate immobilized on modified silica, for
terpene alc. mixts.
Terpenes and Terpenoids, reactions
alcs., oxidn. of, with tetrabromooxomolybdate immobilized on
modified silica as catalyst
Alcohols, reactions
terpenoid, oxidn. of, with tetrabromooxomolybdate immobilized on
modified silica as catalyst
16925-10-3
25232-41-1, tetrabromooxomolybdate complex
121480-82-8, polymer-supported
catalysts, for oxidn. of terpene alc. mixts.
75-91-2
oxidn. by, of terpene alc. mixts. on silica-immobilized
tetrabromooxomolybdate
89-78-1
124-76-5
490-99-3
491-01-0
507-70-0
oxidn. of, with tetrabromooxomolybdate immobilized on modified
silica as catalyst

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115:36467
Oxidation catalysts based on metalloporphyrin on a substrate.
Meunier, Bernard; Labat, Gilles; Seris, Jean Louis (Societe Nationale
Elf Aquitaine (SNEA); Atochem S. A., Fr.). PCT Int. Appl. WO
9101806 A1 21 Feb 1991, 14 pp. DESIGNATED STATES: W: CA,
JP, US; RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE. (World
Intellectual Property Organization) CODEN: PIXXD2. CLASS: ICM:
B01J031-18. ICS: B01J031-06. APPLICATION: WO 90-FR601 7 Aug
1990. PRIORITY: FR 89-10761 10 Aug 1989. DOCUMENT TYPE:
Patent CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms) Section cross-reference(s): 45, 78
Oxidn. catalysts of functional org. compds. consist of synthetic
metalloporphyrins fixed on a substrate. These catalysts involve the use
of polymer-type substrates, which are insol. in the liq. phase,
comprising nitrogenated groups.

Keywords

immobilized metalloporphyrin oxidn catalyst

Index Entries

Chlorination catalysts
Halogenation catalysts
Oxidation catalysts
immobilized metalloporphyrin, prepn. of
Porphyrins
metal complexes, immobilized, for oxidn. and halogenation
catalyst
126-81-8
chlorination of, immobilized metalloporphyrin catalyst for
73215-30-2
120751-65-7
130434-28-5
134417-44-0
134417-45-1
134417-46-2
134609-29-3
in immobilized oxidn. catalyst prepn., for liq. phase
10058-23-8

109536-69-8

oxidizing agent, with immobilized metalloporphyrin catalyst, for liq. phase

93-03-8

oxidn. of, immobilized metalloporphyrin catalyst for

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115:7870

Epoxidation of styrene with tert-butyl hydroperoxide catalyzed by immobilized molybdenum complexes.

Tanielyan, S. K.; Ivanov, S. K.; Kropf, H. (Inst. Org. Chem., Sofia 1113, Bulg.). Oxid. Commun., 12(1-2), 74-81 (English) 1989. CODEN:

OXCODW. ISSN: 0209-4541. DOCUMENT TYPE: Journal CA

Section: 22 (Physical Organic Chemistry)

The epoxidn. of styrene with tert-Bu hydroperoxide in the presence of immobilized molybdenum complexes (IMC) on inorg. and polymeric matrix has been studied in nitrogen and oxygen atm. In oxygen medium, together with the basic scheme of hydroperoxide epoxidn., a set of epoxidn. reactions are also included, proceeding via polyperoxide, peracid, or by alkylperoxy radicals. For some IMC, the nonradical direction is dominant in the ineffective decompn. of hydroperoxide; for other IMC samples, beside the radical, a catalytic initiation of the polymn. is also obsd.

Keywords

epoxidn styrene tertbutyl hydroperoxide mechanism
molybdenum immobilized epoxidn catalyst

Index Entries

Epoxidation catalysts

immobilized molybdenum complexes, for styrene by tert-Bu hydroperoxide, kinetics and mechanism with

Polymer-supported reagents

molybdenum complex, as epoxidn. catalyst for styrene by tert-Bu hydroperoxide, kinetics and mechanism with

Epoxidation

of styrene by tert-Bu hydroperoxide over immobilized molybdenum complexes, mechanism of

Kinetics of epoxidation

of styrene by tert-Bu hydroperoxide over immobilized molybdenum complexes

10025-87-3, reaction product of, with vulkasil S

catalyst contg. molybdenum dioxide and, for epoxidn. of styrene by tert-Bu hydroperoxide, kinetics and mechanism with

18868-43-4

catalyst with vulkasil-P, for epoxidn. of styrene by tert-Bu hydroperoxide, kinetics and mechanism with

132-53-6, complex with molybdenum dioxide and

7(2-furohydroxymethyl)hydroxyquinoline tied to vulkasil-S

147-84-2, complex with molybdenum dioxide and

7(2-furohydroxymethyl)hydroxyquinoline tied to vulkasil-S

148-24-3, complex with molybdenum dioxide and

7(2-furohydroxymethyl)hydroxyquinoline tied to vulkasil-S

151-01-9, complex with molybdenum dioxide and

7(2-furohydroxymethyl)hydroxyquinoline tied to vulkasil-S

4464-80-6, complex with molybdenum dioxide and

7(2-furohydroxymethyl)hydroxyquinoline tied to vulkasil-S

7631-86-9, complexes with molybdenum dioxide and chelating agents

9002-89-5, complex of chloride and molybdenum dioxide chelated to

7-hydroxymethyl-8-hydroxyquinoline tied to

18868-43-4, polymer bound Vulkasil-S and chelating agents

24649-95-4, polymer contg. molybdenum dioxide and chloride and

134407-07-1, complexes of molybdenum dioxide with vulkasil-S
polymer modified with
catalyst, for epoxidn. of styrene by tert-Bu hydroperoxide, kinetics
and mechanism with
75-91-2
epoxidn. by, of styrene, kinetics and mechanism of catalytic
100-42-5, reactions
epoxidn. of, by tert-Bu hydroperoxide over immobilized
molybdenum complexes, kinetics and mechanism of
13637-68-8
polymer supported catalyst contg., for epoxidn. of styrene by
tert-Bu hydroperoxide, kinetics and mechanism with
26173-15-9
polymer supported catalyst, for epoxidn. of styrene by tert-Bu
hydroperoxide, kinetics and mechanism with

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113:151897
Process for preparing a cycloalkanone and/or cycloalkanol.
Baur, Henricus Anna Christiaan; Kragten, Ubaldus Franciscus
(Stamicarbon B. V., Neth.). Eur. Pat. Appl. EP 367326 A1 9 May
1990, 7 pp. DESIGNATED STATES: R: AT, BE, CH, DE, ES, FR,
GB, GR, IT, LI, NL, SE. (European Patent Organization) CODEN:
EPXXDW. CLASS: ICM: C07C045-33. ICS: C07C045-53;
C07C029-50; C07C029-132; C07C049-403; C07C035-08;
C07C409-14. APPLICATION: EP 89-202621 17 Oct 1989.
PRIORITY: NL 88-2592 21 Oct 1988. DOCUMENT TYPE: Patent CA
Section: 24 (Alicyclic Compounds) Section cross-reference(s): 35
The title process comprises oxidn. of a C5-12 cycloalkane by O to form a
cycloalkyl hydroperoxide, followed by decompn. of the latter in the
presence of an org. metal complex, e.g., a phthalocyanine or porphyrin
complex with Co, Mn, Cr, Fe, and/or V, immobilized on an inorg. or a
polymeric carrier. The decompn. was carried out in the presence of O.
Thus, a cyclohexane oxidn. mixt. contg. 200 mmol cyclohexyl
hydroperoxide (CHHP), 60 mmol cyclohexanol (A) and 30 mmol
cyclohexanone (K) per kg of the mixt. was stirred at 80° in the presence
of 70 ppm Co in a form of a silica-bonded Co-phthalocyanine complex
(prepn. given), until the decompn. of CHHP was completed. The
selectivity in respect of the A + K content in the reaction mixt. was 97%,
with a K/A ratio of 0.67. A and K thus obtained were pure enough to be
used directly for the prepn. of caprolactam or adipic acid. The no. of
moles of converted product per mol metal was >50,000.

Keywords

cycloalkanone cycloalkanol prepn caprolactam intermediate
adipic acid intermediate cycloalkanone cycloalkanol
hydroperoxide decompn cobalt phthalocyanine catalyst
phthalocyanine porphyrin metal complex immobilization
cycloalkane carbonylation hydroxylation metal catalyst

Index Entries

Hydroxylation
Oxidation
of cycloalkanes via decompn. of hydroperoxides
Decomposition catalysts
phthalocyanine and porphyrin metal complexes, for cycloalkyl
hydroperoxides to cycloalkanones and cycloalkanols
Cycloalkanols
Cycloalkanones
prepn. of, via decompn. of cycloalkyl hydroperoxides
Hydroperoxides
cycloalkyl, prepn. and decompn. of, in prepn. of cycloalkanols and

cycloalkanones

7631-86-9, uses and miscellaneous

carrier, for cycloalkyl hydroperoxide decompn. catalysts

3317-67-7, amino modified silica-bonded

25511-95-9, polystyrene-bound

60146-43-2

129417-98-7, polystyrene-bound

catalysts, for decompn. of cycloalkyl hydroperoxides

14609-54-2

25511-95-9

129510-67-4

conversion of, to acid chloride, in prepn. of immobilized cycloalkyl hydroperoxide decompn. catalyst

766-07-4

prepn. and decompn. of, immobilized catalysts for

7439-89-6, complex with immobilized porphyrin deriv.

7439-96-5, complex with immobilized porphyrin deriv.

7440-47-3, complex with immobilized porphyrin deriv.

7440-48-4, complex with immobilized porphyrin deriv.

7440-62-2, complex with immobilized porphyrin deriv.

prepn. of, as catalyst

108-93-0, preparation

108-94-1, preparation

prepn. of, by decompn. of cyclohexyl hydroperoxide, immobilized catalysts for

26400-93-1

28802-06-4

97366-71-7

reaction of, with amine-contg. silica, in prepn. of immobilized catalyst

7631-86-9, amino-modified

reaction of, with phthalocyaninetetrasulfonate metal complexes, in prepn. of immobilized cycloalkyl hydroperoxide decompn.

catalyst

61732-12-5

105271-05-4

127917-47-9

reaction of, with silica, in prepn. of immobilized catalyst

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112:56624

Enzymic reactions in aqueous-organic media. VII. Peptide and ester synthesis in organic solvents by α -chymotrypsin immobilized through non-covalent binding to poly(vinyl alcohol).

Noritomi, Hidetaka; Watanabe, Akira; Kise, Hideo (Inst. Mater. Sci., Univ. Tsukuba, Tsukuba 305, Japan). Polym. J. (Tokyo), 21(2), 147-53 (English) 1989. CODEN: POLJB8. ISSN: 0032-3896. DOCUMENT

TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins)

Section cross-reference(s): 9

α -chymotrypsin (CT) was immobilized to poly(vinyl alc.)(PVA) by absorption from its aq. soln. The catalytic activity of CT increased markedly by immobilization for peptide or ester synthesis from N-acetyl-L-tyrosine in hydrophilic org. solvents such as MeCN or EtOH. The yields of the peptide and ester are strongly dependent on the PVA/CT ratio and water content in the reaction medium. The rate and equil. const. of the ester formation reaction are also dependent on water content. These results are discussed in terms of the activation and stabilization of CT in hydrous PVA matrix. The studies on the substrate and stereoselectivity for the ester formation reactions suggest that CT maintains its native conformation in PVA matrix. The stability of PVA immobilized CT is also described.

Keywords

chymotrypsin polyvinyl alc immobilized esterification catalyst
coupling catalyst polyvinyl alc immobilized chymotrypsin

Index Entries

Esterification catalysts
chymotrypsin immobilized on poly(vinyl alc.), for acetyltyrosine
Peptides, preparation
prepn. of, by peptide coupling catalyzed by chymotrypsin
immobilized on poly(vinyl alc.)
9002-89-5
immobilization by, of chymotrypsin, for peptide couplings and
esterification of acetyltyrosine
9004-07-3
immobilized on poly(vinyl alc.), as catalyst for peptide couplings
and esterification of acetyltyrpsine
1668-10-6
3014-80-0
10466-61-2
102029-80-1
peptide coupling of, with acetyltyrosine, immobilized
chymotrypsin-catalyzed
537-55-3
peptide coupling reactions and esterification of, immobilized
chymotrypsin-catalyzed
840-97-1
prepn. of, by immobilized chymotrypsin-catalyzed esterification
29701-41-5
29701-42-6
65356-76-5
99027-00-6
prepn. of, by immobilized chymotrypsin-catalyzed peptide
coupling

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110:142186
Regular and irregular spatial patterns in an immobilized-catalyst
Belousov-Zhabotinskii reaction.
Maselko, Jerzy; Reckley, John S.; Showalter, Kenneth (Dep. Chem.,
West Virginia Univ., Morgantown, WV 26506-6045, USA). J. Phys.
Chem., 93(7), 2774-80 (English) 1989. CODEN: JPCHAX. ISSN:
0022-3654. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
Reaction Kinetics, and Inorganic Reaction Mechanisms)
Unusual spatial patterns are exhibited in a Belousov-Zhabotinskii
reaction in which the ferroin catalyst is immobilized on cation-exchange
resin. A thin layer of ferroin-loaded resin beads covered with soln.
contg. BrO₃⁻, malonic acid, and H₂SO₄ exhibits propagating chem.
waves for periods in excess of 100 h. The no. of spontaneous wave
initiation sites increases with increasing concn. of H₂SO₄ or BrO₃⁻ and
above a crit. concn. only counter-rotating spirals are initiated. An
overcrowding of these sites at high H₂SO₄ or BrO₃⁻ concns. results in
irregular patterns with features suggestive of phase turbulence.

Keywords

Belousov Zhabotinskii oscillating reaction immobilized catalyst
ferroin immobilized resin oscillating reaction catalyst

Index Entries

Oscillating reaction catalysts
Belousov-Zhabotinskii, ferroin immobilized on cation-exchange
resin, for malonic acid with bromate, regular and irregular
spatial patterns in relation to

Kinetics of oscillating reaction

Belousov-Zhabotinskii, of malonic acid with bromate, catalyzed by ferroin immobilized on resin, effect of pH on

Oscillating reaction

Belousov-Zhabotinskii, of malonic acid with bromate, catalyzed by ferroin immobilized on resin, regular and irregular spatial patterns in

14708-99-7

catalyst, immobilized on resin, for oscillating reaction of malonic acid with bromate, regular and irregular spatial patterns in relation to

141-82-2, reactions

oscillating reaction of, with bromate, catalyzed by ferroin immobilized on resin, regular and irregular spatial patterns in

15541-45-4

oscillating reaction of, with malonic acid, catalyzed by ferroin immobilized on resin, regular and irregular spatial patterns in

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110:15791

Comment. Photocatalytic reactor design: an example of mass-transfer limitations with an immobilized catalyst.

Turchi, Craig S.; Ollis, David F. (Dep. Chem. Eng., North Carolina State Univ., Raleigh, NC 27695-7905, USA). J. Phys. Chem., 92(23), 6852-3 (English) 1988. CODEN: JPCHAX. ISSN: 0022-3654.

DOCUMENT TYPE: Journal CA Section: 74 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes) Section cross-reference(s): 67

A polemic in response to R. W. Matthews (ibid. 1987, 91, 3328).

Keywords

photochem reactor immobilized catalyst polemic

mass transfer photoreactor immobilized catalyst polemic

Index Entries

Mass transfer

limitations of, in photochem. reactor with immobilized catalyst

Photolysis catalysts

mass transfer limitations in photochem. reactor with immobilized

Photochemistry

reactor for, design of, mass transfer limitations with immobilized catalyst in relation to

Reactors

photochem., design of, mass transfer limitations with immobilized catalyst in relation to

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106:90971

Surface organometallic chemistry and catalysis by immobilized clusters: dodecacarbonyltriruthenium ($\text{Ru}_3(\text{CO})_{12}$) supported on silica gel.

D'Ornelas, Lindora; Theolier, Albert; Choplin, A.; Basset, Jean Marie (USSR). 5 Mezhdunar. Simp. po Svyazi Mezhd. Gomogen. i

Geterogen. Katal., Novosibirsk 15-19 Iyulya, 1986, Dokl., Novosibirsk, 3(Ch 2), 99-108 From: Ref. Zh., Khim. 1986, Abstr. No.

22B4274(Russian) 1986. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Title only translated.

Keywords

catalyst organometallic precursor immobilized cluster
ruthenium carbonyl silica catalyst

Index Entries

Cluster compounds, coordinative
catalysis by immobilized, on silica gel
Organometallic compounds
catalyst precursor, immobilized cluster formation from
Catalysts and Catalysis
immobilized cluster-silica gel
Carbonyls
transition metal, immobilized clusters, on silica gel, catalysis by
630-08-0, unspecified
carbonyls, transition metal, immobilized clusters, on silica gel,
catalysis by
7440-04-2, uses and miscellaneous
7440-18-8, uses and miscellaneous
catalyst, immobilized cluster complex-silica gel
15243-33-1
15696-40-9
surface interaction of, with silica gel, catalyst formation from

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115:72287

Polymerization of acrylamide in the presence of a reversible redox
initiating system containing immobilized metalloporphyrins.
Patapov, G. P.; Alieva, M. I. (Syktyvka. Gos., Syktyvka, USSR). Izv.
Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol., 34(1), 107-10 (Russian)
1991. CODEN: IVUKAR. ISSN: 0579-2991. DOCUMENT TYPE:
Journal CA Section: 35 (Chemistry of Synthetic High Polymers)
Polymn. of acrylamide occurred in aq. medium in the presence of
reversible redox initiating system contg. metalloporphyrins immobilized
in polyacrylamide gel, H₂O₂, and ascorbic acid (I). The polymn. rate
and mol. wt. of the obtained polymer depended on the type of metal
(Fe³⁺, Cu²⁺, Ce⁴⁺, Ti⁴⁺, Mn²⁺) in the porphyrin complex, polymn. temp.,
and concn. of I.

Keywords

porphyrin metal complex polymn catalyst
redox polymn acrylamide porphyrin complex
ascorbic acid metalloporphyrin polymn catalyst
hydrogen peroxide metalloporphyrin polymn catalyst

Index Entries

Polymer-supported reagents
catalysts, polyacrylamide gel-immobilized, metalloporphyrins,
contg. hydrogen peroxide and ascorbic acid, for redox
polymn. of acrylamide
Porphyrins
metal complexes, catalysts, contg. hydrogen peroxide and ascorbic
acid, polyacrylamide gel-immobilized, for redox polymn. of
acrylamide
Polymerization catalysts
redox, metalloporphyrins, contg. hydrogen peroxide and ascorbic
acid, polyacrylamide gel-immobilized, for acrylamide
Polymerization
redox, of acrylamide, in the presence of polyacrylamide
gel-immobilized metalloporphyrin-ascorbic acid-hydrogen
peroxide system

101-60-0, derivs., metal complexes
 7439-89-6, complexes with porphyrins
 7439-96-5, complexes with porphyrins
 7440-32-6, complexes with porphyrins
 7440-45-1, complexes with porphyrins
 7440-50-8, complexes with porphyrins
 catalysts, contg. hydrogen peroxide and ascorbic acid,
 polyacrylamide gel-immobilized, for redox polymn. of
 acrylamide
 50-81-7, uses and miscellaneous
 catalysts, contg. hydrogen peroxide and metalloporphyrins,
 polyacrylamide gel-immobilized, for redox polymn. of
 acrylamide
 7722-84-1, uses and miscellaneous
 catalysts, contg. metalloporphyrins and ascorbic acid,
 polyacrylamide gel-immobilized, for redox polymn. of
 acrylamide
 9003-05-8
 prepn. of, redox polymn. catalysts for, polyacrylamide
 gel-immobilized metalloporphyrin-ascorbic acid-hydrogen
 peroxide system as

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114:139395
 Luminescence catalyst- and electrically conducting layer-containing
 transparent plate for use as optical biosensor.
 Nakamura, Tetsuro (Matsushita Electric Industrial Co., Ltd., Japan).
 Jpn. Kokai Tokkyo Koho JP 02263480 A2 26 Oct 1990 Heisei, 3 pp.
 (Japan) CODEN: JKXXAF. CLASS: ICM: H01L031-10.
 APPLICATION: JP 89-85435 4 Apr 1989. DOCUMENT TYPE: Patent
 CA Section: 9 (Biochemical Methods)
 An optical biosensor is a transparent plate having a luminescence
 catalyst coated on one side and an elec. conducting layer attached to
 the other side. The elec. conducting layer also has its one side
 attached to an optical lens and the other side to ref. and sample
 light-receiving elements to form a semiconducting optical sensor chip.
 Thus, peroxidase and glucose oxidase are coated on a single-crystal
 silicon plate, and a semiconducting optical sensor chip contg. a
 phototransistor, photodiode, differential circuit, etc. was formed on the
 opposite side of the plate and insulated with silicone-contg. resin to
 provide an economic and small optical biosensor for accurate glucose
 detn.

Keywords

optical biosensor luminescence catalyst semiconductor
 peroxidase glucose oxidase optical biosensor
 chip semiconductor glucose optical biosensor

Index Entries

Luminescence
 catalyst, in optical biosensor
 Photoelectric devices
 in optical biosensor with immobilized luminescence catalyst
 Catalysts and Catalysis
 luminescence, in optical biosensor
 Spectrochemical analysis
 luminescence, in optical biosensor detn. with immobilized
 luminescence catalyst
 Semiconductor devices
 micro-, in optical biosensor for glucose detn.
 Biosensors
 optical, with immobilized luminescence catalyst layer and elec.

conducting layer, for chem. anal.

Transistors

photo-, in optical biosensor with immobilized luminescence

catalyst

50-99-7, analysis

detn. of, by optical biosensor contg. glucose oxidase and

peroxidase

9001-37-0

9003-99-0

immobilized, optical biosensor contg., for glucose detn.

521-31-3

in glucose detn. using optical biosensor contg. glucose oxidase

and peroxidase

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114:80755

Hydrolysis of water-insoluble esters by octadecyl immobilized

H-ZSM-5 catalyst in a water-toluene system.

Ogawa, Haruo; Tensai, Koh; Taya, Kazuo; Chihara, Teiji (Dep. Chem.,

Tokyo Gakugei Univ., Tokyo 184, Japan). J. Chem. Soc., Chem.

Commun., (18), 1246-7 (English) 1990. CODEN: JCCCAT. ISSN:

0022-4936. DOCUMENT TYPE: Journal CA Section: 22 (Physical

Organic Chemistry) Section cross-reference(s): 67

In the hydrolysis of water-insol. esters in a water-toluene system

octadecyltrichlorosilane-treated ZSM-5, which floated at the interface of

the two liqs., was obsd. to be a solid interface catalyst.

Keywords

octadecyl zeolite interface hydrolysis catalyst

ester hydrolysis zeolite interface catalyst

Index Entries

Hydrolysis catalysts

octadecyl immobilized H-ZSM-5, as solid interface catalyst, for

water-insol. esters in water-toluene system

Zeolites, uses and miscellaneous

HZSM 5, octadecyl immobilized, catalysts, for hydrolysis of

water-insol. esters in water-toluene system

Carboxylic acids, esters

esters, hydrolysis of water-insol., by octadecyl immobilized

H-ZSM-5 catalyst, in water-toluene system

79-20-9

106-70-7

109-21-7

110-42-9

112-14-1

123-66-0

123-86-4

141-78-6, reactions

142-92-7

hydrolysis of, by octadecyl immobilized H-ZSM-5 catalyst, in

water-toluene system

112-04-9, HZSM 5 zeolite supported

solid interface catalysts, for hydrolysis of water-insol. esters in

water-toluene system

1335-30-4

zeolites, HZSM 5, octadecyl immobilized, catalysts, for hydrolysis

of water-insol. esters in water-toluene system

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110:213423

Effect of the physicochemical state of a polymer gel on the catalytic properties of gel-immobilized catalysts.

Volodin, V. V.; Kalinina, L. P.; Shepelin, V. A.; Shapiro, A. M.; Smetanyuk, V. I.; Kabanov, V. A. (Inst. Neftekhim. Sint. im. Topchieva, USSR). Vysokomol. Soedin., Ser. B, 30(12), 888-91 (Russian) 1988.

CODEN: VYSBAI. ISSN: 0507-5483. DOCUMENT TYPE: Journal CA

Section: 35 (Chemistry of Synthetic High Polymers) Section

cross-reference(s): 23

During use of poly(4-vinylpyridine)-grafted dicyclopentadiene-ethylene-propylene rubber gel for immobilization of CoCl_2 and NiCl_2 catalysts for the oligomerization of propylene (I) and 1,3-butadiene (II), the activity and selectivity of the catalyst could be regulated by varying the degree of crosslinking of the gel, the solvent nature, and the reaction temp. The catalysts were activated by Et_3Al and $\text{Et}_3\text{Al}_2\text{Cl}_3$. In the oligomerization of I at 273-353 K, the oligomerization rate passed through a max. at 313-333 K. The decrease in activity at high temps. was completely reversible on decreasing the temp., which indicated that the activity was influenced by changes in supramol. structure affecting transport properties and accessibility of active centers. During oligomerization of II, 2 kinetic regions were obsd. and corresponded to changes in selectivity on increasing the reaction temp.

Keywords

cobalt chloride catalyst gel immobilized
nickel chloride catalyst gel immobilized
oligomerization catalyst gel immobilized
polyvinylpyridine grafted EPDM catalyst support
dicyclopentadiene ethylene propylene rubber grafted
olefin oligomerization gel supported catalyst
butadiene oligomerization gel supported catalyst
structure gel support oligomerization catalyst

Index Entries

Polymer-supported reagents
cobalt and nickel chlorides, catalysts, for oligomerization of olefins
Crosslinking
degree of, of poly(vinylpyridine)-grafted EPDM rubber gel, as support for oligomerization catalysts for olefins, activity and selectivity in relation to
Polymer morphology
of poly(vinylpyridine)-grafted EPDM rubber gel, as support for oligomerization catalysts for olefins, activity and selectivity in relation to
Polymerization catalysts
oligomerization, metal chloride-organoaluminum, gel-supported, for olefins, gel structure in relation to activity and selectivity of
Kinetics of polymerization
oligomerization, of butadiene, in presence of gel-supported catalysts, gel structure in relation to
110970-21-3
catalyst supports, for cobalt chloride and nickel chloride, for oligomerization of olefins, activity and selectivity in relation to structure of
97-93-8, uses and miscellaneous
12075-68-2
catalysts, contg. gel-supported metal chlorides, for oligomerization of olefins, gel structure in relation to activity and selectivity of
7646-79-9, uses and miscellaneous
7718-54-9, uses and miscellaneous
catalysts, gel-supported, for oligomerization of olefins, gel structure in relation to activity and selectivity of

9003-07-0

oligomeric, prepn. of, in presence of gel-supported catalysts, gel structure in relation to activity in

106-99-0, reactions

oligomerization of, in presence of gel-supported catalysts, gel structure in relation to kinetics and selectivity of

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110:57151

Structure and catalytic activity of supported metal complexes. 5. Immobilized rhodium complexes in the reaction of hydrogen transfer from 2-propanol to ketones and olefins.

Dovganyuk, V. F.; Isaeva, V. I.; Sharf, V. Z. (Inst. Org. Khim. im. Zelinskogo, Moscow, USSR). Izv. Akad. Nauk SSSR, Ser. Khim., (6), 1223-8 (Russian) 1988. CODEN: IASKA6. ISSN: 0002-3353.

DOCUMENT TYPE: Journal CA Section: 24 (Alicyclic Compounds)

Section cross-reference(s): 25

Rh complexes modified by aminophosphine groups and immobilized on SiO₂ catalyzed H transfer from Me₂CHOH to cyclohexanone, 2-cyclohexen-1-one, and styrene, and catalyzed isomerization of PhCH₂CH:CH₂. The reactions were promoted by KOH.

Keywords

redn cyclohexanone cyclohexenone catalyst

styrene redn catalyst

allylbenzene isomerization catalyst

propenylbenzene

ethylbenzene

cyclohexanol

ketone redn catalyst

olefin redn catalyst

alkene redn catalyst

Index Entries

Isomerization catalysts

(aminophosphino)rhodium complexes, silica-immobilized, for allylbenzene

Reduction catalysts

(aminophosphino)rhodium complexes, silica-immobilized, for cyclohexanone, cyclohexenone, and styrene

Polymer-supported reagents

silica-supported (aminophosphino)rhodium complexes, catalysts for isomerization of allylbenzene and redn. of styrene, cyclohexanone, and cyclohexenone

17157-61-8, silica-supported

catalyst, contg. rhodium compds., for isomerization of allylbenzene and redn. of cyclohexanone, cyclohexenone, and styrene

10049-07-7

14694-95-2

catalyst, contg. silica-supported aminophosphines, for isomerization of allylbenzene and redn. of cyclohexanone

12092-47-6

catalyst, contg. silica-supported aminophosphines, for isomerization of allylbenzene and redn. of cyclohexanone, cyclohexenone, and styrene

108-94-1, reactions

formation and redn. of, catalytic

300-57-2

isomerization of, catalytic

766-90-5

873-66-5

prepn. of

108-93-0, preparation
 prepn. of, by redn. of cyclohexanone or cyclohexenone, catalytic
 100-41-4, preparation
 prepn. of, by redn. of styrene, catalytic
 100-42-5, reactions
 930-68-7
 redn. of, catalytic

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110:15792

Response to the comment. "Photocatalytic reactor design: an example of mass-transfer limitations with an immobilized catalyst".

Matthews, Ralph W. (Div. Energy Chem., Ind. Res. Organ., Sutherland 2232, Australia). J. Phys. Chem., 92(23), 6853-4 (English) 1988. CODEN: JPCHAX. ISSN: 0022-3654. DOCUMENT TYPE: Journal CA Section: 74 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes) A polemic in answer to Craig S. Turchi and David F. Ollis (ibid. 6853-4).

Keywords

photochem reactor immobilized catalyst polemic
 mass transfer photoreactor catalyst polemic

Index Entries

Mass transfer
 limitations of, in photochem. reactor with immobilized catalyst
 Photolysis catalysts
 mass transfer limitations in photocatalytic reactor contg. immobilized
 Reactors
 photochem., design of, mass transfer limitations with immobilized catalyst in relation to
 Photochemistry
 reactor for, design of, mass transfer limitations with immobilized catalyst in relation to

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108:152553

Manufacture of crystalline amides using immobilized biological catalysts.

Kawakami, Kiyoshi; Tanabe, Toyoji (Technology Research Assoc. for New Application Development for Light-Weight Fractions, Japan). Jpn. Kokai Tokkyo Koho JP 62267255 A2 19 Nov 1987 Showa, 6 pp.

(Japan) CODEN: JKXXAF. CLASS: ICM: C07C102-08.

APPLICATION: JP 86-109401 15 May 1986. DOCUMENT TYPE:

Patent CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes) Section cross-reference(s): 7, 23, 35

Nitriles contg. ³4 C are hydrated in the presence of fixed biol. catalysts to prep. amides by a method which includes transferring the reaction liq. from the reactor to a crystn. tank, crystg. above the f.p. without crystn. of nitrile, transferring the slurry to a solid-liq. separator, discharging amide crystals, adding nitrile to the liq. from the solid-liq. separator, and recycling the liq. to the reactor. A catalyst from AK-32 strain was fixed on Ca alginate and used to convert methacrylonitrile to methacrylamide.

Keywords

nitrile hydration amide catalyst

amide manuf nitrile hydration
 hydration nitrile biol catalyst
 immobilization biol catalyst hydration
 enzyme hydration catalyst nitrile
 methacrylonitrile hydration methacrylamide
 methacrylamide manuf nitrile hydration

Index Entries

Hydration catalysts
 biol., immobilized, for nitriles to amides
 Nitriles, reactions
 hydration of, to amines, with fixed biol. catalyst
 Amides, preparation
 manuf. of cryst., from nitriles, with fixed biol. catalyst
 Immobilization, biochemical
 of enzymes, for hydration of nitrile to amide
 Enzymes
 immobilized, for hydration of nitrile to amine
 100-54-9
 110-61-2
 123-19-3
 126-98-7
 hydration of, to amine, fixed biol. catalyst for
 9005-35-0
 25034-58-6
 immobilization of biol. catalyst by, for hydration of nitrile to amide
 79-39-0
 98-92-0
 110-14-5
 541-35-5
 manuf. of cryst., from nitrile, with fixed biol. catalyst

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107:58531
 Preparation of highly active hydrogenation catalyst by immobilization
 of polymer-protected colloidal rhodium particles.
 Hirai, Hidefumi; Ohtaki, Michitaka; Komiyama, Makoto (Fac. Eng.,
 Univ. Tokyo, Tokyo 113, Japan). Chem. Lett., (1), 149-52 (English)
 1987. CODEN: CMLTAG. ISSN: 0366-7022. DOCUMENT TYPE:
 Journal CA Section: 24 (Alicyclic Compounds) Section
 cross-reference(s): 23
 Colloidal dispersion of rhodium protected by copolymer of
 CH₂:CHCO₂Me and N-vinyl-2-pyrrolidone is treated with
 polyacrylamide gel having amino groups, resulting in immobilization of
 the rhodium particles onto the gel. The gel-immobilized rhodium
 particles exhibit 2-22 fold larger catalytic activities than a rhodium
 carbon catalyst for hydrogenation of olefins (EtOCH:CH₂, CH₂:CHCN,
 MeCH₂CH₂CH₂CH:CH₂, Me₂C:CHCOMe, cyclohexene) at 30° under 1
 atm.

Keywords

immobilized colloidal rhodium hydrogenation catalyst
 polymer immobilized colloidal rhodium
 olefin hydrogenation immobilized colloidal rhodium

Index Entries

Hydrogenation
 of olefins
 Kinetics of hydrogenation
 of olefins in presence of polymer-immobilized colloidal rhodium
 Hydrogenation catalysts

polymer-immobilized colloidal rhodium, for olefins
 7440-16-6, uses and miscellaneous
 catalyst, polyacrylamide-immobilized colloidal dispersion of, for
 hydrogenation of olefins
 1333-74-0, unspecified
 hydrogenation, of olefins
 27155-03-9
 prepn. and use in formation of rhodium catalyst for alkene
 hydrogenation
 107-13-1, reactions
 109-92-2
 110-83-8, reactions
 592-41-6, reactions
 38440-96-9
 rate of hydrogenation of, in presence of polymer-immobilized
 rhodium colloidal dispersion
 10049-07-7
 redn. and colloidal dispersion of, with vinyl pyrrolidone-Me acrylate
 copolymer, hydrogenation catalyst from

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115:190765

Critical conditions of chemical wave propagation in gel layers with an
 immobilized catalyst.

Aliev, R. R.; Agladze, K. I. (Inst. Biol. Phys., Pushchino 142292, USSR).

Physica D (Amsterdam), 50(1), 65-70 (English) 1991. CODEN:

PDNPDT. ISSN: 0167-2789. DOCUMENT TYPE: Journal CA

Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
 Mechanisms)

Autowaves spreading in a thin layer of the Belousov-Zhabotinskii
 reaction with ferroin catalyst immobilized in SiO₂ gel were studied.
 There is a crit. thickness of this layer such that autowaves could not
 propagate in thinner layers. The results of computer simulations in the
 2-variable Rovinsky model qual. fit the exptl. data for the temp. range
 used.

Keywords

Belousov Zhabotinskii reaction immobilized catalyst
 silica gel thickness Belousov Zhabotinskii reaction

Index Entries

Silica gel, uses and miscellaneous
 ferroin catalyst immobilized in, for oscillating reaction of malonic
 acid with bromate, wave propagation in relation to
 Oscillating reaction catalysts
 Belousov-Zhabotinskii, ferroin, immobilized in silica gel, for
 malonic acid with bromate, wave propagation in relation to
 Oscillating reaction
 Belousov-Zhabotinskii, of bromate with malonic acid, catalyzed by
 ferroin immobilized in silica gel, effect of layer thickness
 on wave propagation in
 14708-99-7
 catalysts, immobilized in silica gel, for oscillating reaction of
 malonic acid with bromate, wave propagation in relation to
 141-82-2, reactions
 oscillating reaction of, with bromate, catalyzed by ferroin
 immobilized in silica gel, effect of layer thickness on wave
 propagation in
 15541-45-4
 oscillating reaction of, with malonic acid, catalyzed by ferroin
 immobilized in silica gel, effect of layer thickness on wave
 propagation in

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115:157104

Application of thin-film biocatalysts to organic synthesis.
Burdick, Brent A.; Schaeffer, James R. (Life Sci. Res. Lab., Eastman Kodak Co., Rochester, NY 14650, USA). Biomimetic Polym., 15-37.
Edited by: Gebelein, Charles G. Plenum: New York, N. Y. (English)
1990. CODEN: 57HCAJ. DOCUMENT TYPE: Conference CA
Section: 16 (Fermentation and Bioindustrial Chemistry)
Coating methods developed for use in the prepn. of photog. and clin. anal. materials were adapted for use in the construction of immobilized thin-film biocatalysts. Syntheses of gluconic acid, pyruvic acid, aspartic acid, alanine, and ribavirin were catalyzed with thin-film biocatalysts. Several of the synthetic processes utilize bioreactors composed of spirally wound immobilized biocatalysts.

Keywords

biocatalyst coating film org synthesis

Index Entries

Brevibacterium acetylicum
Escherichia coli
Pseudomonas dacunhae
immobilization of, in thin films as biocatalyst
Enzymes
thin-film-immobilized, as catalysts in org. synthesis
32378-54-4
conversion of, to aspartic acid, thin-film-immobilized Escherichia coli catalyst in
492-62-6
oxidn. of, thin-film enzyme catalysis in
50-21-5, reactions
oxidn. of, thin-film enzyme catalyst in
56-84-8, reactions
prepn. and decarboxylation of, thin-film enzyme catalysts in
56-41-7, preparation
prepn. of, by aspartic acid decarboxylation, thin-film enzyme catalyst in
526-95-4
prepn. of, from glucose, oxidase-catalase thin-film catalyst in
127-17-3, preparation
prepn. of, from lactic acid, thin-film enzyme catalyst in
36791-04-5
prepn. of, thin-film-immobilized Brevibacterium acetylicum in
3641-08-5
reaction of, with inosine, thin-film-immobilized Brevibacterium acetylicum in
58-63-9
reaction of, with triazolecarboxamide, thin-film-immobilized Brevibacterium acetylicum in
9001-05-2
9001-37-0
9028-72-2
thin-film oxidn. catalyst contg.

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114:83408

Preparation and catalytic action of cyclodextrin-immobilized ethylene-vinyl alcohol copolymer membrane.
Nakamae, Katsuhiko; Miyata, Takashi; Yoshida, Naoto (Fac. Eng., Kobe Univ., Kobe 657, Japan). Chem. Express, 6(1), 21-4 (English)

1991. CODEN: CHEXEU. ISSN: 0911-9566. DOCUMENT TYPE:
Journal CA Section: 38 (Plastics Fabrication and Uses)
b-Cyclodextrin (I)-immobilized ethylene-vinyl alc. copolymer(II)
membranes were prep'd., and their catalytic action for the hydrolysis of
esters was studied. An efficient reactor was obtained by the
immobilization of I including p-nitrophenol (III) (I-III immobilization
method) on II membrane and by excluding III from I-II membrane. The
immobilization of I on II membrane cast on polyethylene substrate
depressed the permeation of an unhydrolyzed ester, and efficient sepn.
of a product from a reactant was achieved with this membrane.

Keywords

cyclodextrin immobilized ethylene copolymer membrane
vinyl alc copolymer cyclodextrin immobilized
hydrolysis catalyst cyclodextrin immobilized membrane

Index Entries

Hydrolysis catalysts
cyclodextrin immobilized on ethylene-vinyl acetate copolymer
membrane as, for esters
Membranes
ethylene-vinyl acetate copolymer, cyclodextrin immobilized on, as
hydrolysis catalysts for esters
7585-39-9
catalysts, immobilized on ethylene-vinyl alc. copolymer membrane,
for hydrolysis of esters
830-03-5
hydrolysis of, catalysts for, cyclodextrin immobilized on
ethylene-vinyl acetate copolymer membrane as
25067-34-9
membranes, catalysts, cyclodextrin immobilized on, for hydrolysis
of esters
100-02-7, preparation
prepn. of, by hydrolysis of p-nitrophenyl acetate, catalysts for,
cyclodextrin immobilized on ethylene-vinyl acetate
copolymer membrane as

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113:115791

Asymmetric catalysis. L. Heterogeneous enantioselective
hydrogenation with immobilized rhodium(I) complexes.
Brunner, Henri; Bielmeier, Ernst; Wiehl, Juergen (Inst. Anorg. Chem.,
Univ. Regensburg, Regensburg D-8400, Fed. Rep. Ger.). J.
Organomet. Chem., 384(1-2), 223-41 (German) 1990. CODEN:
JORCAI. ISSN: 0022-328X. DOCUMENT TYPE: Journal CA Section:
34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s):
29
The supports BaSO₄, cellulose, silica gel, aluminum oxide, AgCl, and
charcoal are impregnated with the complexes [Rh(COD)(-)-Diop]PF₆
(COD - 2,5-cyclooctadiene), [Rh(COD)(-)-Norphos]PF₆, so that they are
insol. under the reaction conditions. These catalysts were used for the
asym. hydrogenation of (Z)- α -acetamidocinnamic acid in aq. NaOH to
give N-acetylphenylalanine with up to 70% enantiomeric excess (ee).
On repeated use of the [Rh(COD)(-)-Diop]PF₆ systems, optical
induction decreases, whereas it increases with the
[Rh(COD)(-)-Norphos]PF₆ and [Rh(COD)(+)-Norphos]PF₆ systems in
the first re-uses. The hydrogenation activity of all the catalysts declines
on repeated use. The cations of the complexes [Rh(COD)(-)-Diop]PF₆,
[Rh(COD)(-)-Norphos]PF₆, and [Rh(COD)(+)-Norphos]PF₆ are bound
to the strongly acidic ion exchangers DOWEX HCR-S and DOWEX
MSC-1 and to the weakly acidic ion exchangers SERDOLIT CW-18
and SERVACEL CM-32. These catalysts were used for the

hydrogenation of (Z)- α -acetamidocinnamic acid in aq. or alc. solns. in optical yields of up to 87% ee. The results regarding the repeated use of the catalysts fixed on the ion exchange resins are similar to those obtained with the catalysts fixed on the other supports. Acetamidoacrylic acid and Me (Z)- α -acetamidocinnamate are also hydrogenated enantioselectively by the heterogeneous catalysts.

Keywords

enantioselective hydrogenation immobilized rhodium complex
heterogeneous rhodium complex asym hydrogenation
dehydroamino acid heterogeneous enantioselective hydrogenation

Index Entries

Charcoal

Silica gel, uses and miscellaneous
as support for chiral rhodium complexes in heterogeneous
enantioselective hydrogenation of acetamidocinnamic acid
Stereochemistry
of hydrogenation of dehydroamino acids catalyzed by immobilized
chiral rhodium complexes

Hydrogenation catalysts
stereoselective, immobilized chiral rhodium complexes, for
dehydroamino acids

Hydrogenation
stereoselective, of dehydroamino acids in presence of
immobilized chiral rhodium complexes

Amino acids, reactions
unsatd., asym. hydrogenation of, immobilized chiral rhodium
complexes as catalysts for

7727-43-7

7783-90-6, uses and miscellaneous

9004-34-6, uses and miscellaneous

53025-53-9

64082-73-1

74899-57-3

128876-37-9

1344-28-1, uses and miscellaneous

as support for chiral rhodium complexes in heterogeneous
enantioselective hydrogenation of acetamidocinnamic acid

5429-56-1

55065-02-6

60676-51-9

asym. hydrogenation of, immobilized chiral rhodium complexes as
catalyst for

1333-74-0, unspecified

hydrogenation, stereoselective, of dehydroamino acids in presence
of immobilized chiral rhodium complexes

128899-54-7

128900-04-9

128900-06-1

immobilized, catalysts, for acetamidocinnamic acid

2018-61-3

10172-89-1

prepn. of, by asym. hydrogenation of acetamidocinnamic acid
catalyzed by immobilized chiral rhodium complexes

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112:139869

Thermolysis of the surface-layer-immobilized initiators.

Kucher, R. V.; Min'ko, S. S.; Luzinov, I. A.; Voronov, S. A.; Tokarev, V. S.; Vasil'ev, V. P. (Inst. Fiz. Khim. im. Pisarzhevskogo, Lvov, USSR). Dokl. Akad. Nauk SSSR, 307(3), 640-4 [Phys. Chem.] (Russian) 1989.

CODEN: DANKAS. ISSN: 0002-3264. DOCUMENT TYPE: Journal
 CA Section: 35 (Chemistry of Synthetic High Polymers)
 Study of CH₂:CHCYCCMe₂OOBu-tert (I) copolymers with maleic anhydride (II) and (meth)acrylic acid as polymeric initiators in various states (in soln., adsorbed on TiO₂ filler, chem. bonded with CaCO₃) for the polymn. of styrene provided an isokinetic dependence which explains the decreased reactivity often obsd. for immobilized initiators and which can be used for studying the structure of adsorbed polymer layers. The activation energy of thermal polymn. decreased from 124 kJ/mol for I-II copolymer (III) in soln. to 72 kJ/mol for III adsorbed on TiO₂.
 A linear dependence was established between the enthalpy and the entropy of thermolysis and initiation by the polymeric initiators, indicating the presence of a compensation effect. A math. expression was obtained from the isokinetic dependence that was used to det. the fraction of I units bound to a solid surface, which varied depending on the structure of the adsorbed copolymer layer.

Keywords

peroxyhexenyne copolymer catalyst immobilized
 thermolysis immobilized polymeric initiator
 kinetics polymn immobilized polymeric initiator
 styrene polymn immobilized polymeric initiator

Index Entries

Entropy
 of polymn. of styrene, in presence of immobilized peroxy polymeric initiator, enthalpy in relation to
 Heat of polymerization
 of styrene, in presence of immobilized peroxy polymeric initiator, entropy in relation to
 Polymerization catalysts
 peroxy polymers, for styrene, immobilization effect on thermolysis of
 Dissociation
 thermal, of peroxy polymeric initiators, for polymn. of styrene, immobilization effect on
 Kinetics of polymerization
 thermal, of styrene, in presence of peroxy polymeric initiators, immobilization effect on
 126038-25-3
 catalysts, for polymn. of styrene, immobilization effect on thermolysis and initiation kinetics of
 29535-43-1
 catalysts, for polymn. of styrene, thermolysis and initiation kinetics of
 75034-19-4
 catalysts, immobilized, for polymn. of styrene, thermolysis and initiation kinetics of
 74079-11-1
 catalysts, immobilized, for polymn. of styrene, thermolysis and initiation kinetics of
 13463-67-7, uses and miscellaneous
 fillers, peroxy polymeric initiators immobilized on, for polymn. of styrene, thermolysis and initiation kinetics in relation to
 100-42-5, reactions
 polymn. of, in presence of peroxy polymeric initiators, immobilization effect initiation kinetics of
 471-34-1, uses and miscellaneous
 supports, for peroxy polymeric initiators, for polymn. of styrene, thermolysis and initiation kinetics in relation to

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111:227982

Construction of bifunctional catalyst by immobilization of enzyme on semiconductor powders.

Taya, Masahito; Shiraishi, Hiroyuki; Tone, Setsuji (Fac. Eng. Sci., Osaka Univ., Toyonaka 560, Japan). Chem. Express, 4(10), 653-6 (English) 1989. CODEN: CHEXEU. DOCUMENT TYPE: Journal CA

Section: 7 (Enzymes)

A bifunctional catalyst was prepd. by the immobilization of alc. dehydrogenase on TiO₂ (a semiconductor). The catalyst had both the activities of photochem. oxidn. for NADH and enzymic redn. of NAD. It was possible to achieve the cyclic reaction with NAD regeneration by this catalyst.

Keywords

semiconductor alc dehydrogenase immobilization
NAD redn semiconductor immobilized alc dehydrogenase
photooxidn NADH immobilized alc dehydrogenase
bifunctional catalyst semiconductor immobilized enzyme

Index Entries

Oxidation, photochemical
of NADH by alc. dehydrogenase immobilized deriv.
Immobilization, biochemical
of alc. dehydrogenase, on semiconductor powders
Semiconductor materials
titanium oxide, alc. dehydrogenase immobilized on, NADH
photooxidn. and NAD enzymic redn. by
13463-67-7, uses and miscellaneous
alc. dehydrogenase immobilized on powd., NADH photooxidn.
and NAD enzymic redn. by
9031-72-5
immobilized, on titanium oxide powder, NADH photooxidn. and
enzymic redn. by
1314-13-2, reactions
1314-35-8, reactions
7440-21-3, reactions
photooxidn. by, of NADH
58-68-4
photooxidn. of, by alc. dehydrogenase immobilized deriv.
53-57-6
photooxidn. of, by semiconductors
53-84-9
redn. of, by alc. dehydrogenase immobilized deriv.

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110:237631

Properties of trypsin immobilized on the surface of organic-modified silicas.

Yanishpol'skii, V. V.; Lyubinskii, G. V.; Tertykh, V. A. (Inst. Khim. Poverkh., Kiev, USSR). Teor. Eksp. Khim., 25(1), 113-16 (Russian) 1989. CODEN: TEKHA4. ISSN: 0497-2627. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 7, 66

Trypsin (I) was immobilized on poly(maleic anhydride) (MA) or cyanuric acid chloride (CAC)-grafted silica. Due to a different surface charge of the support different pH-dependences of the hydrolysis rates of Na-benzoyl-D,L-arginine-p-nitroanilide by the immobilized preps. are obtained. I activity on MA-silica increased in the presence of CaCl₂ in solns. It decreased to the initial value when EDTA removed Ca²⁺. This was not obsd. on CAC-silica catalysts. The biol. catalyst I is affected by bonding with a solid matrix.

Keywords

trypsin immobilized org surface silica catalysis
benzoylargininenitroanilide hydrolysis immobilized trypsin

Index Entries

Hydrolysis
of benzoylargininenitroaniline, on trypsin immobilized on
org.-modified silicas
Hydrolysis catalysts
trypsin immobilized on org.-modified silicas, for
benzoylargininenitroaniline
108-77-0
24937-72-2
catalysis by trypsin immobilized on silica grafted with
9002-07-7
catalysis of hydrolysis of benzoylargininenitroaniline by
immobilized, on poly(maleic anhydride)- and cyanuric acid
chloride-grafted silica
7631-86-9, uses and miscellaneous
catalyst trypsin immobilized on poly(maleic anhydride)- and
cyanuric acid chloride-grafted
10043-52-4, reactions
catalytic activity enhanced by, of trypsin immobilized on
organically-modified silicas, in hydrolysis of
benzoylargininenitroaniline
911-76-2
hydrolysis of, catalyzed by trypsin immobilized on organically
coated silica

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110:154853

Synthesis of aspartame precursor: α -L-aspartyl-L-phenylalanine methyl ester in ethyl acetate using thermolysin entrapped in polyurethane. Yang, Chin Pin; Su, Chein Shyong (Dep. Chem. Eng., Tatung Inst. Technol., Taipei, Taiwan). Biotechnol. Bioeng., 32(5), 595-603 (English) 1988. CODEN: BIBIAU. ISSN: 0006-3592. DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 7
Cross-linked polyurethane (PU) was prepd. for entrapping thermolysin. Using immobilized thermolysin (IT), Z-Asp-OH (I, Z = PhCH₂O₂C) was coupled with H-Phe-OMe (II) in water-satd. EtOAc to give only Z-Asp-Phe-OMe in 94% conversion for 30 h of reaction at 40° with 46 mg of entrapped enzyme. PU support prepd. from polypropylene glycol (#2000) showed better properties than from polypropylene (#1000) and polyethylene (#1000). Addn. of polyol could increase the gel fraction of PU. The IT PU-II-G-3, prepd. from a 1:2 mol ratio of PPG (#2000) and glycerin, gave the highest gel fraction and best swelling, and 89.0% of residual activity was obtained after 4 times of reuse (72 h). The stability of immobilized thermolysin was good; the activity loss resulting from dehydr. and leak of enzyme in each time of reuse were found only about 2%. The kinetics of the immobilized thermolysin-catalyzed condensation reaction was first order in II and the Lineweaver-Burk plot of 1/V against 1/[I] yields a straight line, showing that the reaction involves consecutive reactions of I and II with the immobilized enzyme and with the I-immobilized enzyme complex, with the second reaction being the rate-detg. step.

Keywords

aspartic acid condensation phenylalaninate thermolysin catalyst
polyurethane immobilized thermolysin peptide coupling catalyst
kinetics condensation benzyloxycarbonylaspartic acid phenylalaninate
thermolysin

aspartame precursor

Index Entries

Kinetics of condensation reaction
of benzyloxycarbonylaspartic acid with phenylalanine Me ester in
the presence polyurethane-immobilized thermolysin
Polymer-supported reagents
polyurethane immobilized thermolysin, for coupling of
benzyloxycarbonylaspartic acid with phenylalanine Me ester
to give aspartame precursor
Condensation reaction catalysts
polyurethane-immobilized thermolysin, for
benzyloxycarbonylaspartic acid with phenylalanine Me ester
9073-78-3
immobilized in polyurethane, catalyst, for coupling of
benzyloxycarbonylaspartic acid with phenylalanine Me ester
2577-90-4
peptide coupling of, with benzyloxycarbonylaspartic acid in the
presence of immobilized thermolysin, kinetics of
1152-61-0
peptide coupling of, with phenylalanine Me ester in the presence of
immobilized thermolysin, kinetics of
33605-72-0
prepn. of, by coupling in the presence of immobilized thermolysin

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110:39399

Study of immobilized catalysts. XXIII. Supported heterometal
complexes with controlled distribution of transition metals.
Uflyand, I. E.; Pomogailo, A. D.; Golubeva, N. D.; Starikov, A. G.
(Rostov. Gos. Pedagog. Inst., Rostov-on-Don, USSR). Kinet. Katal.,
29(4), 885-90 (Russian) 1988. CODEN: KNKTA4. ISSN: 0453-8811.
DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic
High Polymers)
The title catalysts for copolymn. of ethylene with a-butene to a linear
LDPE were prepd. by reaction of allyl alc.-ethylene graft
copolymer-immobilized $TiCl_4$ or VCl_4 with tricyclic azomethine chelates
of $Cu(II)$, $Ni(II)$, or $Co(II)$. Complexation with Ti or V occurred via
transcoordination of ligands with transition of the divalent metal
coordination sphere from square planar to tetrahedral or octahedral
geometry. In the supported heterometal catalysts, Ti and V served as
copolymn. centers and the Cu, Ni, and Co atoms served as
dimerization centers. Copolymers with a predetd. degree of branching
could be obtained using the catalysts.

Keywords

catalyst polymn polymer supported
ethylene copolymn polymer supported catalyst
butene copolymn polymer supported catalyst
vanadium catalyst polymn polymer supported
titanium catalyst polymn polymer supported
copper catalyst polymn polymer supported
nickel catalyst polymn polymer supported
cobalt catalyst polymn polymer supported

Index Entries

Polymer-supported reagents
catalysts, from titanium or vanadium tetrachloride and Schiff base
complexes, for polymn. of ethylene with butene
Polymerization catalysts
titanium or vanadium chloride-Schiff base heterometal complex,

polymer-supported, for ethylene with butene, prepn. and
 properties of
 118422-59-6
 118422-60-9
 118422-61-0
 catalyst prepn. from polymer-supported titanium or vanadium
 chloride and, for polymn. of ethylene with butene
 7550-45-0, uses and miscellaneous
 7632-51-1
 catalyst prepn. from polymer-supported, and Schiff base complex,
 for polymn. of ethylene with butene
 25087-34-7
 prepn. of, polymer-supported heterometal complexes as catalysts
 for
 110339-70-3
 supports, for heterometal complex catalysts for polymn. of ethylene
 with butene

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109:178812

Electrocatalytic oxidation of nerol with nitroxyl radical covalently
 immobilized to poly(acrylic acid) coated on carbon electrodes.
 Osa, Tetsuo; Akiba, Uichi; Segawa, Isao; Bobbitt, James M. (Pharm.
 Inst., Tohoku Univ., Sendai 980, Japan). Chem. Lett., (8), 1423-6
 (English) 1988. CODEN: CMLTAG. ISSN: 0366-7022. DOCUMENT
 TYPE: Journal CA Section: 72 (Electrochemistry) Section
 cross-reference(s): 22, 23
 Glassy C electrode coating poly(acrylic acid) immobilized covalently
 with 2,2,6,6-tetramethylpiperidinyloxy was characterized
 electrochem. and a similar modified C felt electrode was utilized
 successfully to electrocatalytic oxidn. of nerol.

Keywords

electrocatalytic oxidn nerol polymer modified electrode
 acrylic acid polymer modified carbon electrode

Index Entries

Carbon fibers, uses and miscellaneous
 electrodes from felt of, coated with poly(acrylic acid) with
 immobilized nitroxyl radical, for oxidn. of nerol
 Coupling agents
 for immobilization of aminotetramethylpiperidinyloxy to poly(acrylic
 acid)
 Electrodes
 nitroxyl radical immobilized poly(acrylic acid) coated glassy
 carbon
 Oxidation, electrochemical
 of nerol, with nitroxyl radical covalently immobilized to poly(acrylic
 acid) coated to carbon electrode
 Oxidation catalysts
 electrochem., tetramethylpiperidinyloxy, for nerol
 9003-01-4
 carbon electrode coated with nitroxyl radical immobilized,
 electrocatalytic oxidn. of nerol with
 7440-44-0, unspecified
 carbon fibers, electrodes from felt of, coated with poly(acrylic acid)
 with immobilized nitroxyl radical, for oxidn. of nerol
 538-75-0
 coupling reagent, for amide-linking in immobilization of
 aminotetramethylpiperidinyloxy to poly(acrylic acid)
 7601-89-0
 7791-03-9

electrocatalytic oxidn. of nerol and charge transport diffusion of nitroxyl radical immobilized poly(acrylic acid) in acetonitrile contg.

108-48-5

electrocatalytic oxidn. of nerol at nitroxyl radical immobilized poly(acrylic acid) coated glassy carbon electrode in presence of

7440-44-0, uses and miscellaneous

electrodes from glassy, coated with poly(acrylic acid) with immobilized nitroxyl radical, for oxidn. of nerol

116964-60-4

formation of, by immobilization of aminotetramethylpiperidinyloxy to poly(acrylic acid) in presence of dicyclohexylcarbodiimide

14691-88-4

immobilization of, to poly(acrylic acid) coated on carbon electrodes, as oxidn. catalyst for nerol

106-25-2

oxidn. of, electrocatalytic, with nitroxyl radical covalently immobilized to poly(acrylic acid) coated on carbon electrode

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107:154016

Heterogenization of optically active organic bases on silica carriers.

Krotov, V. V.; Staroverov, S. M.; Nesterenko, P. N.; Lisichkin, G. V.

(Mosk. Gos. Univ., Moscow, USSR). Zh. Obshch. Khim., 56(11),

2460-7 (Russian) 1986. CODEN: ZOKHA4. ISSN: 0044-460X.

DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds) Section cross-reference(s):

29, 34, 67

(-)-Ephedrine and L-serine and L-hydroxyproline Me esters were immobilized on halopropyl group-modified silica. The immobilized amino acids were enantioselective catalysts for the Michael addn. reaction of thiophenol with benzylideneacetophenone.

Keywords

amino acid silica immobilized catalyst

stereochem Michael addn thiophenol benzylideneacetophenone

Index Entries

Michael reaction catalysts

optically active amino acids on silica, for thiophenol with benzylideneacetophenone

Amino acids, uses and miscellaneous

silica-immobilized, catalysts for Michael addn. reaction of thiophenol with benzylideneacetophenone

108-98-5, reactions

Michael addn. reaction of, with benzylideneacetophenone

94-41-7

Michael addn. reaction of, with thiophenol, silica-gel found optically active amino acids as catalysts

50-98-6

1499-56-5

2627-86-3

2788-84-3

immobilization of, on modified silica

13883-39-1

immobilization of, on silica gel

110582-67-7, silica gel-immobilized

prepn. and substitution reaction with iodide

110582-68-8, silica gel-immobilized

prepn. and substitution reactions with ephedrine and hydroxy amino

acids

21205-14-1

prepn. of

110582-69-9, silica gel-immobilized

110582-70-2, silica gel-immobilized

110582-71-3, silica gel-immobilized

110582-72-4, silica gel-immobilized

prepn. of, as catalyst for Michael addn. of thiophenol to
benzylideneacetophenone

110582-73-5, silica gel-immobilized

substitution reaction of, with phenylethylamine

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106:23820

Hydroformylation catalysts containing a supported liquid phase of
rhodium complexes with dibenzophosphole.

Hertkier, D. (USSR). 5 Mezhdunar. Simp. po Svyazi mezhdur

Gomogen. i Geterogen. Katal., Novosibirsk, 15-19 Iyulya, 1986. Dokl.,

Novosibirsk, 2(CH 1), 233-45 From: Ref. Zh., Khim. 1986, Abstr. No.

21B4290(Russian) 1986. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 22

Title only translated.

Keywords

hydroformylation catalyst rhodium supported complex

phosphole dibenzo rhodium complex catalyst

dibenzophosphole rhodium complex catalyst

Index Entries

Kinetics of hydroformylation

of propene, on rhodium immobilized complex catalyst

Hydroformylation catalysts

rhodium immobilized complexes, on silica gel

7440-16-6, uses and miscellaneous

catalysts, immobilized on silica gel for hydroformylation

1088-00-2, rhodium complexes

catalysts, immobilized on silica gel, for hydroformylation

115-07-1, reactions

hydroformylation of, on rhodium immobilized complex catalysts

17185-29-4

reaction of, in rhodium immobilized catalyst prepn.

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115:280535

Enzymic peptide synthesis in organic solvent mediated by gels of
copolymerized acrylic derivatives of α -chymotrypsin and
polyoxyethylene.

Fulcrand, Valerie; Jacquier, Robert; Lazaro, Rene; Viallefont, Philippe
(Lab. Synth. Physicochem. Stud. Amino Acids Peptides, Univ.

Montpellier II, Montpellier 34095, Fr.). Int. J. Pept. Protein Res., 38(3),
273-7 (English) 1991. CODEN: IJPPC3. ISSN: 0367-8377.

DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides,
and Proteins) Section cross-reference(s): 9

Copolymers of acrylated derivs. of α -chymotrypsin and polyethylene
glycol have been prep'd. and used as catalysts for the synthesis of
model peptides in org. solvent contg. a low quantity of water. Other
peptide couplings have been tried to point out the regio- and
stereoselectivity, and examples of segment couplings are given.

Keywords

immobilized chymotrypsin catalyst peptide coupling
polyethylene glycol modified chymotrypsin amidation catalyst

Index Entries

Amidation

peptide coupling, of amino acid esters with leucinamide in
presence of polyethylene glycol-modified chymotrypsin

Amidation catalysts

peptide coupling, polyethylene glycol-modified chymotrypsin, for
amino acid esters with leucinamide

1161-13-3

13734-34-4

126028-15-7

attempted peptide coupling of, with leucine amide in presence of
polyethylene glycol-immobilized chymotrypsin

118596-75-1

copolymn. of, with acryloyl-modified chymotrypsin, as catalysts for
peptide coupling reactions

9004-07-3

immobilized with acrylated polyethylene glycol, as catalyst for
peptide coupling reactions

687-51-4

5619-16-9

15893-47-7

38678-59-0

peptide coupling of, with amino acid esters, polyethylene
glycol-immobilized chymotrypsin as catalyst for

137584-37-3

peptide coupling of, with glycylglycine ester, polyethylene
glycol-immobilized chymotrypsin as catalysts for

537-55-3

840-97-1

2018-61-3

2361-96-8

3978-80-1

4816-89-1

4865-47-8

7663-85-6

28709-70-8

60397-86-6

126028-11-3

126028-12-4

126028-14-6

137584-35-1

137584-36-2

peptide coupling of, with leucine amide, polyethylene
glycol-immobilized chymotrypsin-catalyzed

13171-94-3

65118-58-3

65356-76-5

69193-14-2

106815-35-4

126028-17-9

126028-19-1

137584-38-4

137584-39-5

prepn. of

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115:183901

Enzymic peptide synthesis in organic solvent.

Fulcrand, V.; Jacquier, R.; Lazaro, R.; Viallefont, P. (Lab. Synth. Etud.

Physicochim. Aminoacides Pept., Univ. Montpellier II, Montpellier 34095, Fr.). Pept. 1990, Proc. Eur. Pept. Symp., 21st, Meeting Date 1990, 301-2. Edited by: Giralt, Ernest; Andreu, David. ESCOM Sci. Publ.: Leiden, Neth. (English) 1991. CODEN: 57HNAI. DOCUMENT TYPE: Conference CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 9
A report from a symposium on the use of acryloyl a-chymotrypsin-polyethylene glycol copolymer gels as catalysts for the prepn. of Ac-Tyr-Leu-NH₂. The optimal water content is closely related to the hydrophobicity of the enzyme environment.

Keywords

immobilized chymotrypsin catalyst peptide coupling
enzymic peptide coupling chymotrypsin symposium
polymer bound chymotrypsin peptide coupling

Index Entries

Polymer-supported reagents
chymotrypsin immobilized in polyethylene glycol copolymer gel, for coupling of acetyltyrosine ester with leucine amide
Amidation catalysts
peptide coupling, chymotrypsin immobilized in polyethylene glycol copolymer gel, for acetyltyrosine ester with leucine amide
Amidation
peptide coupling, of acetyltyrosine ester with leucine amide in presence of immobilized chymotrypsin
9004-07-3
immobilized in polyethylene glycol copolymer gel, as catalyst for peptide coupling
840-97-1
peptide coupling of, with leucine amide, immobilized chymotrypsin as catalyst for
65356-76-5
prepn. of, by coupling with immobilized chymotrypsin

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115:121186
Methods for forming oxides bearing immobilized ultrafine gold particles.
Haruta, Masatake; Kobayashi, Tetsuhiko; Tsubota, Susumu; Nakahara, Yoshiko (Agency of Industrial Sciences and Technology, Japan). Ger. Offen. DE 4009111 A1 27 Sep 1990, 20 pp. (Germany) CODEN: GWXXBX. CLASS: ICM: B01J023-52. ICS: B01J023-66; B01J023-68. ICA: B01J037-08; C09C001-00; C09C003-00; C07C055-12; C07C059-06; C07C055-06; C07C059-08; C07C055-08; C07C057-145; C07C055-10; C07C059-235; C07C059-255; C07C059-265; G01N027-12. APPLICATION: DE 90-4009111 21 Mar 1990. PRIORITY: JP 89-73603 24 Mar 1989. DOCUMENT TYPE: Patent CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 57
The title methods entail: neutralizing an aq. soln. contg. a Au compd., a water-sol. metal salt, and optionally ³¹ carboxylic acids or carboxylic acid salts by combining it with an alkali metal compd. to produce a mixed ppt.; adding ³¹ carboxylic acid compds. (if they are not already present) and sepg. the ppt. from the liq., and heating (calcining) the ppt. Use of the materials as catalysts is indicated.

Keywords

catalyst oxide immobilized gold particle

Index Entries

Catalysts and Catalysis

Oxidation catalysts

oxides bearing immobilized gold particles, prepn. of

50-21-5, uses and miscellaneous

50-21-5, salts

68-04-2

77-92-9, uses and miscellaneous

77-92-9, salts

79-14-1, uses and miscellaneous

79-14-1, salts

87-69-4, uses and miscellaneous

87-69-4, salts

110-15-6, uses and miscellaneous

110-15-6, salts

110-16-7, uses and miscellaneous

110-16-7, salts

110-94-1

110-94-1, salts

141-82-2, uses and miscellaneous

141-82-2, salts

144-62-7, uses and miscellaneous

144-62-7, salts

497-19-8, uses and miscellaneous

584-08-7

640-67-5

866-81-9

996-23-6

1344-67-8

5908-80-5

5908-81-6

6915-15-7, salts

7446-70-0, uses and miscellaneous

7646-78-8, uses and miscellaneous

7646-79-9, uses and miscellaneous

7646-85-7, uses and miscellaneous

7647-18-9

7705-07-9, uses and miscellaneous

7718-54-9, uses and miscellaneous

7733-02-0

7773-01-5

7779-25-1

7779-88-6

7785-87-7

7786-81-4

10031-62-6

10043-01-3

10124-43-3

10124-44-4

10124-49-9

10141-05-6

10377-66-9

10402-29-6

12040-57-2

13138-45-9

13473-90-0

13693-11-3

14104-77-9

16088-89-4

20328-96-5

22465-17-4

40968-90-9

41480-79-9

52009-50-4

132036-01-2
 135744-32-0
 135744-33-1
 in prepn. of oxides bearing immobilized gold particles
 630-08-0, reactions
 1333-74-0, reactions
 oxidn. of, catalyst for, prepn. of oxides bearing immobilized gold particles as
 1314-13-2, preparation
 1344-28-1, preparation
 13463-67-7, preparation
 18282-10-5
 prepn. of, bearing immobilized gold particles
 7440-57-5, uses and miscellaneous
 prepn. of, immobilized on oxides, for catalysts
 506-65-0
 13967-50-5
 15189-51-2
 16903-35-8
 127622-29-1
 reaction of, in prepn. of gold particles immobilized on oxides

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114:82338
 A cobalt complex immobilized to chitosan.
 Yang, Je Ha; Vigee, G. S. (Dep. Chem., Univ. Alabama, Birmingham, AL 35294, USA). J. Inorg. Biochem., 41(1), 7-16 (English) 1991.
 CODEN: JIBIDJ. ISSN: 0162-0134. DOCUMENT TYPE: Journal CA
 Section: 33 (Carbohydrates) Section cross-reference(s): 29
 Polymeric ligand was prepd. by attaching salicylaldehyde to the amine function of the polysaccharide chitosan through a Schiff-base reaction. The Schiff-base bond was reduced with sodium borohydride. The isolated polymeric ligand was characterized by phys. and chem. methods and was shown to contain two chitosan hexose rings for each salicylaldehyde moiety. The polymeric ligand was used to prep. a cobalt complex which was used as an oxidn. catalyst in aq. soln. to catalyze the oxidn. of catechol to o-quinone using dissolved oxygen as the oxidant.

Keywords

oxidn catalyst immobilized cobalt complex
 chitosan support cobalt oxidn catalyst
 catechol oxidn cobalt oxidn catalyst
 quinone

Index Entries

Oxidation catalysts
 cobalt complex immobilized on chitosan for catechol
 Oxidation
 of catechol to ortho-benzoquinone with cobalt complex
 immobilized on chitosan
 120-80-9, reactions
 catalytic oxidn. of, with cobalt complex immobilized on chitosan
 7791-13-1
 complexation of, with reduced chitosan salicylaldehyde Schiff base
 90-02-8, reactions
 condensation of, with chitosan in prepn. of cobalt oxidn. catalyst
 9012-76-4
 condensation of, with salicylaldehyde in prepn. of cobalt oxidn. catalyst
 9012-76-4, salicylaldehyde-cobalt complex
 prepn. and catalytic oxidn. by, of catechol, ortho-benzoquinone via

583-63-1

prepn. of, via catalytic cobalt complex oxidn. of catechol

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114:8507

Immobilization of a block copolymer of styrene and quaternized 4-vinylpyridine on latex and its effect on the cobalt phthalocyanine-catalyzed oxidation of 2-mercaptoethanol.

Van Streun, Karel H.; Tennebroek, Ronald; Piet, Pieter; German, Anton L. (Lab. Polym. Chem., Eindhoven Univ. Technol., Eindhoven 5600 MB, Neth.). Makromol. Chem., 191(9), 2181-93 (English) 1990. CODEN: MACEAK. ISSN: 0025-116X. DOCUMENT TYPE: Journal CA

Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

Section cross-reference(s): 38

To overcome mass transport limitations usually encountered on immobilizing highly active catalysts, cationic latex particles were used as a support for tetra-Na phthalocyaninatocobalt(II)tetrasulfonate (I). The cationic latex was prepd. by emulsion copolymn. of styrene and divinylbenzene in the presence of a block copolymer from styrene and 4-vinyl-N-methylpyridinium iodide (II) serving as surfactant. The latex-bound system increased the reaction rate of the oxidative coupling of 2-mercaptoethanol in the presence of I as compared with the conventional polymer-free system. Michaelis-Menten kinetics were obsd. for all 3 systems investigated (block copolymer-stabilized latex, homogeneous block copolymer, and II homopolymer). Although the stability of the latex and II homopolymer-contg. systems after successive runs was rather poor, this immobilization method showed the great potential value of anchoring highly active systems retaining high catalytic activity. The turnover no. was increased on immobilizing the block copolymer compared with the homogeneous block copolymer soln. The Michaelis const. was hardly affected by immobilization. Due to conformational changes of the polymer chain on immobilization, a comparison between the latex system and the homogeneous system contg. either homopolymer or block copolymer remained difficult.

Keywords

styrene vinylmethylpyridinium copolymer immobilization
block copolymer immobilized oxidn catalyst
mercaptoethanol oxidative coupling immobilized catalyst

Index Entries

Polymer-supported reagents
quaternized styrene-vinylpyridine block copolymers, for
mercaptoethanol coupling catalysts, on crosslinked
polystyrene latexes
Kinetics of coupling reaction
oxidative, of mercaptoethanol, in presence of tetrasodium
phthalocyaninatocobalttetrasulfonate supported on
polystyrene latex-immobilized quaternized
styrene-vinylpyridine block copolymers
Coupling reaction catalysts
oxidative, tetrasodium phthalocyaninatocobalttetrasulfonate, for
mercaptoethanol, latex-immobilized quaternized
styrene-vinylpyridine block copolymers as supports for
14586-48-2
catalysts, for oxidative coupling of mercaptoethanol, crosslinked
polystyrene latex-immobilized quaternized
styrene-vinylpyridine block copolymers as supports for
60-24-2
coupling of, oxidative, catalysts for, crosslinked polystyrene
latex-immobilized quaternized styrene-vinylpyridine block
copolymers as supports for

107082-96-2

immobilization of, on crosslinked polystyrene latexes, in prepn. of supports for mercaptoethanol coupling catalysts

9052-95-3

latexes, quaternized styrene-vinylpyridine block copolymers

immobilized on, as supports for mercaptoethanol

oxidative coupling catalysts

1892-29-1

prodn. of, by oxidative coupling of mercaptoethanol, immobilized

cobalt phthalocyanine catalysts for

30773-17-2

supports, for mercaptoethanol oxidative coupling catalysts

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114:7190

Synthesis of D-alanine oligopeptides catalyzed by D-aminopeptidase in non-aqueous media.

Kato, Yasuo; Asano, Yasuhisa; Nakazawa, Akiko; Kondo, Kiyosi (Sagami Chem. Res. Cent., Kanagawa 229, Japan). Biocatalysis, 3(3), 207-15 (English) 1990. CODEN: BIOCED. ISSN: 0886-4454.

DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 9

Synthesis of D-alanine oligopeptides from D-alanine Me ester hydrochloride has been demonstrated by use of immobilized D-aminopeptidase from Ochrobactrum anthropi (Achromobacter sp.) in non-aq. media. D-Alanine dimer and trimer were obtained in 56% and 6% yield, resp., when 250 mM of the substrate was incubated for 3 h with urethane-prepolymer immobilized D-aminopeptidase (1.5 U/mL) and 3 equiv of Et3N in water-satd. PhMe. The kcat of this reaction was 19,500 (min-1), which is several ten thousand times greater than that of the known enzymic synthesis of amino acid oligomers.

Keywords

D alanine oligopeptide aminopeptidase catalyst
oligomerization catalyst D aminopeptidase

Index Entries

Polymerization catalysts

oligomerization, immobilized D-aminopeptidase, for D-alanine Me ester in nonaq. media

Amines, uses and miscellaneous

tertiary, effect of, on immobilized D-aminopeptidase-catalyzed oligomerization of D-alanine Me ester in nonaq. media

Peptides, preparation

D-alanine-contg., prepn. of, by immobilized

D-aminopeptidase-catalyzed oligomerization of D-alanine

Me ester in nonaq. media

102-69-2

102-82-9

121-44-8, uses and miscellaneous

1122-58-3

7087-68-5

effect of, on immobilized D-aminopeptidase-catalyzed oligomerization of D-alanine Me ester in nonaq. media

923-16-0

1114-94-9

formation of, by immobilized D-aminopeptidase-catalyzed oligomerization of D-alanine Me ester in nonaq. media

57534-78-8

immobilized, catalyst, for oligomerization of D-alanine Me ester in nonaq. media

14316-06-4

oligomerization of, in nonaq. media catalyzed by immobilized
D-aminopeptidase

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114:5058

Catalytic activity of different types of carbon catalysts combined with immobilized glycerol in the chemical modification of edible fats and oils.

Stavitskaya, S. S.; Tarkovskaya, I. A.; Kuznetsova, I. R. (Inst. Fiz. Khim., Kiev, USSR). Ukr. Khim. Zh. (Russ. Ed.), 56(6), 586-8 (Russian) 1990.

CODEN: UKZHAU. ISSN: 0041-6045. DOCUMENT TYPE: Journal

CA Section: 17 (Food and Feed Chemistry)

Carbon catalysts AR-3 and DOU-107 combined with immobilized glycerol accelerated the esterification reaction of beef fat and vegetable oil mixts. severalfold as compared to these catalyst without immobilized glycerol. However, no effect on the transesterification reaction was obsd. When DOU-17 with immobilized glycerol and DOU-108 in Na form (or SKHO-150 in Na form) were combined, both reactions (e.g., esterification and transesterification were accelerated. The addn. of previously hydrolyzed beef fat to a palm stearin and vegetable oil mixt. in the presence of DOU-108 in Na form increased the transesterification rate.

Keywords

carbon catalyst immobilized glycerol oil transesterification
fat transesterification carbon catalyst immobilized glycerol

Index Entries

Transesterification catalysts

carbon, with immobilized glycerol, combined with esterification catalysts, for vegetable oils and animal fats

Esterification catalysts

carbon, with immobilized glycerol, combined with transesterification catalysts, for vegetable oils and animal fats

Fats, biological studies

cattle, esterification and transesterification of, carbon catalysts for Palm oil

stearins, esterification and transesterification of, carbon catalysts for

Oils, glyceridic

vegetable, esterification and transesterification of, carbon catalysts for

7440-44-0, uses and miscellaneous

esterification and transesterification catalyst with immobilized glycerol from, for vegetable oils and animal fats

56-81-5, uses and miscellaneous

immobilized on esterification and transesterification catalysts, vegetable oils and animal fats transesterification response to

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112:234815

Immobilized metal chelate catalysts and their use for the preparation of monocarboxylic acid anhydrides.

Luft, Gerhard; Trabold, Peter (Hoechst A.-G., Fed. Rep. Ger.). Eur.

Pat. Appl. EP 332969 A1 20 Sep 1989, 10 pp. DESIGNATED

STATES: R: AT, BE, CH, DE, FR, GB, IT, LI, NL. (European Patent Organization) CODEN: EPXXDW. CLASS: ICM: C07C053-00. ICS:

C07C051-54. APPLICATION: EP 89-103873 6 Mar 1989. PRIORITY:

DE 88-3808867 17 Mar 1988. DOCUMENT TYPE: Patent CA

Section: 23 (Aliphatic Compounds) Section cross-reference(s): 67

(RCO)₂O (R = C1-4 alkyl) were prepd. by a gas-phase carbonylation of RCO₂R or ROR with CO in the presence of iodine or Br or their compds. as reaction promoters, and a chelate complex catalyst I or II [X = Cl, Br, OR₂; Y = N(R₄)₂, N-contg. heteroaryl, P(R₄)₂, As(R₄)₂, SR₄, SH; Z = bond, (un)substituted arylene; R₁ = C1-5 alkyl; R₂ = C1-5 alkyl, Ph; R₃ = H, C1-3 alkyl; R₄ = (un)substituted C1-6 alkyl, C5- or C6- cycloalkyl, Ph, CH₂Ph; m = 2-6; n = 0-2] on an inorg. oxide or active carbon carrier, at 130-400° and 1-150 bar. One side of I, II were chem. anchored to the carrier via OH groups on the carrier surface while on the opposite side a Group VIII noble metal or a chromium compd. was bound as a chelate. Thus, 2 mL MeOAc was heated at 180° with 0.5 mL MeI and 7.2 g supported Rh complex catalyst (III; A = silica residue) (prepn. given) in a CO atm. at 15 bar to give, after 1 h, a catalyst performance of 19.7 g Ac₂O/g Rh/h with 95% selectivity.

Keywords

carboxylic anhydride prepn ester carbonylation
alkyl ether carbonylation anhydride prepn
rhodium chelate catalyst ester carbonylation

Index Entries

Carbonylation catalysts

Group VIII metal chelates, for alkyl esters and ethers

Anhydrides

prepn. of, by carbonylation of alkyl esters or ethers

79-20-9

carbonylation of, in prepn. carboxylic anhydrides

125853-11-4

125853-12-5

catalyst, for carbonylation of alkyl esters and ethers

125482-95-3

125482-96-4

125482-97-5

125482-98-6

125482-99-7

prepn. and reaction of, in prepn. of carbonylation catalyst

108-24-7

prepn. of, by carbonylation of alkyl esters and ethers

74-88-4, uses and miscellaneous

promoter, for carbonylation of alkyl esters and ethers

78-62-6

reaction of, Grignard reaction of, with

bis(diphenylphosphino)(chlorophenyl)butane, in prepn. of

carbonylation catalyst

14523-22-9

reaction of, with bis(diphenylphosphino)(triethoxysilyl)butane, in

prepn. of carbonylation catalyst

78-10-4

reaction of, with butenylmagnesium bromide, in prepn. of

carbonylation catalyst

36851-76-0

reaction of, with chlorine, in prepn. of carbonylation catalyst

4376-01-6

reaction of, with dichlorotriethoxysilylbutane, in prepn. of

carbonylation catalyst

106872-21-3

reaction of, with tetraethoxysilane, in prepn. of carbonylation

catalyst

112:121038

Hydroxylation of alkanes catalyzed by manganese tetraphenylporphyrin immobilized on imidazole-modified silica gel.

Tatsumi, Takashi; Nakamura, Makoto; Tominaga, Hiroo (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Catal. Today, 6(1-2), 163-70 (English) 1989. CODEN: CATTEA. ISSN: 0920-5861. DOCUMENT TYPE:

Journal CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

Manganese tetraphenylporphyrin complex fixed on imidazole-modified silica exhibited fair catalytic activity for cyclohexane oxidn. and hydroxylation by H₂O₂. Immobilization of the porphyrin complex could result in the prevention of the formation of m-oxo dimers, increasing the catalytic capability. Turnover nos. for cyclohexane oxidn. were greatly improved by decreasing metal loadings, suggesting the importance of site isolation of the metal complexes. Rather high loading of imidazolyl groups was required since its ligation to Mn was fully effected when imidazolyl group in large excess of Mn was present, as shown in the change in the diffuse reflectance spectra with imidazolyl/Mn ratio.

Keywords

cyclohexane hydroxylation catalyst manganese
porphyrin manganese catalyst hydroxylation
imidazole silica catalyst hydroxylation
oxidn cyclohexane catalyst manganese

Index Entries

Hydroxylation catalysts
Oxidation catalysts
manganese porphyrins, immobilized, for cyclohexane
32195-55-4
catalysts, on silica gel, for hydroxylation and oxidn. of cyclohexane
7722-84-1, reactions
cyclohexane oxidn. and hydroxylation by, immobilized manganese
catalysts for
108-93-0, preparation
108-94-1, preparation
formation of, in oxidn. of cyclohexane in presence of immobilized
manganese catalysts
35203-44-2, derivs.
in prepn. of silica-immobilized manganese complexes for
hydroxylation and oxidn. of cyclohexane
110-82-7, reactions
oxidn. and hydroxylation of, immobilized manganese catalysts for

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110:17734

Chemiluminescence detection in flowing streams - immobilized and solid-state reagents.

Nieman, Timothy A. (Dep. Chem., Univ. Illinois, Urbana, IL 61801, USA). J. Res. Natl. Bur. Stand. (U. S.), 93(3), 501-2 (English) 1988. CODEN: JRN BAG. ISSN: 0160-1741. DOCUMENT TYPE: Journal;

General Review CA Section: 79 (Inorganic Analytical Chemistry)

Section cross-reference(s): 80

A review with no refs. The use of immobilized and solid-state reagents in chemiluminescence and electrochemiluminescence anal. is discussed. Examples for luminol-H₂O₂-catalyst systems are given.

Keywords

review immobilized reagent chemiluminescence analysis
solid state reagent chemiluminescence analysis review
luminol immobilized reagent chemiluminescence analysis review

catalyst immobilized reagent chemiluminescence analysis review
 peroxide immobilized reagent chemiluminescence analysis review
 flowing stream chemiluminescence analysis review
 electrochemiluminescence analysis review

Index Entries

Oxidation catalysts

immobilized, in chemiluminescence detns. in flowing streams
 Spectrochemical analysis
 chemiluminescence, in flowing streams, with immobilized and
 solid-state reagents
 Spectrochemical analysis
 electrochemiluminescence, in flowing streams
 7722-84-1, analysis
 detn. and use of, in chemiluminescence anal. in flowing streams,
 immobilized and solid-state reagents in
 521-31-3
 immobilized, in chemiluminescence detns. in flowing streams

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110:14171

Preparation and characterization of supported mixed metal oxides:
 thermal decomposition of heteropoly metal complexes
 immobilized on silica.
 Beckler, Robert K.; White, Mark G. (Sch. Chem. Eng., Georgia Inst.
 Technol., Atlanta, GA 30332-0100, USA). J. Catal., 112(1), 157-67
 (English) 1988. CODEN: JCTLA5. ISSN: 0021-9517. DOCUMENT
 TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and
 Inorganic Reaction Mechanisms)
 Supported mixed metal oxides were prepd. by the temp.-programmed
 decompn. of a highly characterized system of SiO₂-immobilized
 heteropoly complexes contg. Cu(II) and M(III) M(III) = Al, Cr, Fe). The
 investigation focused on 2 main aspects of the thermal degrdn.: a study
 of the decompn. path and characterization of the resultant samples.
 The decompn. process, monitored in situ by thermogravimetric anal., IR
 spectroscopy, and mass spectrometry, led to the formation of mixed
 oxides with a stoichiometry of MCu₆O_{7.5}. Electron microscopy showed
 sintering of the oxides into particles which contain Cu and M. The
 population of these particles increased with increasing temp. Selective
 chemisorptions of NH₃, CO, and NO indicated that temp. of decompn.
 affects active site densities. In particular, conditions for the decompn.
 could be selected to maximize the activation of metal oxide sites by
 complex decompn. yet minimize the deactivation by sintering of
 supported oxide particles.

Keywords

heteropoly copper complex thermal decompn silica
 catalyst prepn heteropoly thermal decompn
 aluminum copper complex thermal decompn
 chromium copper complex thermal decompn
 iron copper complex thermal decompn
 chemisorption metal oxide catalyst

Index Entries

Chemisorption

of ammonia and carbon monoxide and nitric oxide, on supported
 mixed metal oxide catalysts, surface structure in relation to
 Thermal decomposition
 of heteropoly metal complexes immobilized on silica, in catalyst
 prepn.
 Surface structure

of supported mixed metal oxide catalysts prepd. by thermal
decompn. of heteropoly metal complexes immobilized on
silica
Catalysts and Catalysis
oxide, prepn. of, by thermal decompn. of heteropoly metal
complexes immobilized on silica
630-08-0, reactions
7664-41-7, reactions
10102-43-9, reactions
chemisorption of, on supported mixed metal oxide catalyst,
surface structure in relation to
106219-77-6
110486-30-1
110486-31-2
thermal decompn. of, immobilized on silica, in catalyst prepn.

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107:208585

Photocatalytic decomposition of hydrogen sulfide in the presence of
polymer immobilized cadmium sulfide. Promotion by I and VIII
Group metals.

Gruzdkov, Yu. A.; Savinov, E. N.; Parmon, V. N. (Inst. Catal.,
Novosibirsk 630090, USSR). Int. J. Hydrogen Energy, 12(6), 393-401
(English) 1987. CODEN: IJHEDX. ISSN: 0360-3199. DOCUMENT
TYPE: Journal CA Section: 74 (Radiation Chemistry, Photochemistry,
and Photographic and Other Reprographic Processes) Section
cross-reference(s): 52, 67

Active photocatalysts for decompn. water-soluted H₂S into H and S are
prepd. via supporting CdS on a cation-exchange polymer. Finely
dispersed Group VIII metals copptd. with CdS on the polymer
considerably enhance the reaction rate, the activity of the
photocatalysts being correlated with the overpotential for electrochem.
evolution of these metals. A special treatment of CdS with Cu or Ag
results in a sufficient expanding the spectra range of the photocatalyst
as well as in a substantial rise of its activity. A possible mechanism of
the catalytic action of the metal promoted photocatalysts is discussed.

Keywords

photodecompn catalyst hydrogen sulfide aq
copper doped cadmium sulfide photocatalyst
silver doped cadmium sulfide photocatalyst
metal doped cadmium sulfide photocatalyst

Index Entries

Photolysis catalysts
cadmium sulfide polymer immobilized and doped with copper or
silver, for hydrogen prodn. from aq. hydrogen sulfide
Group VIII elements
catalysts from polymer-immobilized cadmium sulfide doped with,
for photolysis of hydrogen sulfide
1333-74-0, preparation
7704-34-9, preparation
formation of, in photocatalytic decompn. of hydrogen sulfide
1306-23-6, uses and miscellaneous
photocatalyst, polymer-immobilized and metal-doped, decompn.
of hydrogen sulfide by
7732-18-5, uses and miscellaneous
photocatalytic decompn. of hydrogen sulfide in soln. of, in presence
of polymer-immobilized metal-doped cadmium sulfide
catalysts
64772-46-9
photolysis catalysts of doped cadmium sulfide immobilized by

7440-22-4, uses and miscellaneous
 7440-50-8, uses and miscellaneous
 photolysis of hydrogen sulfide catalyzed by polymer-immobilized
 cadmium sulfide doped by
 1313-82-2, uses and miscellaneous
 photolysis of hydrogen sulfide in presence of polymer-immobilized
 metal-doped cadmium sulfide catalysts in aq. soln. contg.
 7783-06-4, reactions
 photolysis of, catalyzed by polymer-immobilized cadmium sulfide
 doped with metals

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107:142185

Immobilized catalysts. XXII. Steric structure and catalytic properties
 of the fixed mono- and binuclear nickel chelates.
 Uflyand, I. E.; Pomogailo, A. D.; Gorbunova, M. O.; Starikov, A. G.;
 Sheinker, V. N. (Rostov. Gos. Pedagog. Inst., Rostov-on-Don, USSR).
 Kinet. Katal., 28(3), 613-18 (Russian) 1987. CODEN: KNKTA4. ISSN:
 0453-8811. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
 Reaction Kinetics, and Inorganic Reaction Mechanisms)
 Polymeric supports were prepd. with chelating groups (diketone,
 diacylamine, aminovinyl ketone, acylsalicylamide) and then reacted in
 alc. solns. with Ni(OAc)₂ to form mono- and binuclear Ni chelates. The
 immobilized Ni exhibits octahedral coordination. Splitting parameters
 and the degree of Ni-ligand s bond covalency were detd. Immobilized
 Ni chelates are highly stable active sites for C₂H₄ dimerization to
 butene.

Keywords

nickel immobilized chelate dimerization catalyst
 ethylene dimerization immobilized chelate

Index Entries

Dimerization catalysts
 immobilized nickel chelate, prepn. and properties of
 Catalysts and Catalysis
 immobilized nickel, prepn. and properties of
 9002-88-4, immobilized nickel chelates
 catalyst, for dimerization of ethylene
 7440-02-0, immobilized chelates
 catalysts, for dimerization of ethylene
 74-85-1, reactions
 dimerization of, on nickel immobilized chelate catalyst

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106:202521

Cobalt hydroxides immobilized on ionites as catalyst for
 water-to-oxygen oxidation.
 Elizarova, G. L.; Kim, T. V.; Matvienko, L. G.; Parmon, V. N. (Inst.
 Catal., Novosibirsk 630090, USSR). React. Kinet. Catal. Lett., 31(2),
 455-9 (English) 1986. CODEN: RKCLAU. ISSN: 0304-4122.
 DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
 Kinetics, and Inorganic Reaction Mechanisms) Section
 cross-reference(s): 52
 The prepn. of O₂-evolving catalysts by immobilization of Co compds. on
 ion-exchange resins is proposed. Immobilized Co hydroxides are
 more selective in the reaction of H₂O-to-O oxidn. than bulk CoOOH.
 When prepd. as mixts. with Al(III), Fe(III), Sn(IV), or Ce(IV), they become
 even more selective.

Keywords

water oxidn cobalt ionite catalyst
 aluminum cobalt ionite catalyst water oxidn
 iron cobalt ionite catalyst water oxidn
 tin cobalt ionite catalyst water oxidn
 cerium cobalt ionite catalyst water oxidn

Index Entries

Oxidation catalysts

cobalt-ionite, for water, selectivity of, effect of transition metal additives on

Oxidation

of water, on cobalt-ionite catalyst

108334-12-9

catalyst from cobalt and, for oxidn. of water, selectivity of

7429-90-5, uses and miscellaneous

7439-89-6, uses and miscellaneous

7440-31-5, uses and miscellaneous

7440-32-6, uses and miscellaneous

7440-45-1, uses and miscellaneous

catalysts from cobalt and ionite and, for oxidn. of water, selectivity of

7440-48-4, uses and miscellaneous

catalysts from ionite and, for oxidn. of water, selectivity of

7732-18-5, reactions

oxidn. of, on cobalt-ionite catalyst

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115:29453

Hydrosilylation of methylenecyclopropane and methylenecyclobutane on an immobilized platinum catalyst.

Finkel'shtein, E. Sh.; Fedorov, V. E.; Filatova, M. P. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, USSR). Izv. Akad. Nauk SSSR, Ser.

Khim., (4), 958-60 (Russian) 1991. CODEN: IASKA6. ISSN:

0002-3353. DOCUMENT TYPE: Journal CA Section: 29

(Organometallic and Organometalloidal Compounds)

Reaction of methylenecyclobutane with MeSiHCl_2 over a catalyst

prepd. from reaction of $\text{H}_2\text{PtCl}_6 \cdot 6\text{H}_2\text{O}$ with phosphinylated silica gel

$\text{Ph}_2\text{P}(\text{CH}_2)_n\text{SiMe}_2\text{O}[\text{SiO}_2]_m$ gave 83% $\text{RCH}_2\text{SiMeCl}_2$ (R = cyclobutyl).

In contrast, treating methylenecyclopropane with R_1SiHX_2 ($\text{R}_1 = \text{Me}$, X =

Cl; $\text{R}_1 = \text{X} = \text{Et}$) over the same catalyst gave 65%

$\text{CH}_2:\text{CHCH}_2\text{CH}_2\text{SiR}_1\text{X}_2$.

Keywords

methylenecyclopropane methylenecyclobutane hydrosilylation platinum catalyst

cyclopropane methylene hydrosilylation platinum catalyst

cyclobutane methylene hydrosilylation platinum catalyst

Index Entries

Hydrosilylation catalysts

modified silica-gel-bound platinum, for methylenecycloalkanes

18497-13-7

catalyst with phosphinylated silica, for hydrosilylation

134648-37-6, silica-gel bound

catalyst with platinum, for hydrosilylation

1120-56-5

6142-73-0

hydrosilylation of, platinum catalyst for

75-54-7

617-86-7

hydrosilylation with, of methylenecycloalkanes in presence of
immobilized platinum catalysts

1591-27-1
4848-57-1
15983-86-5
38958-24-6
134653-12-6
prepn. of

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114:166724

Aqueous phase hydroformylation of propene catalyzed over rhodium complexes immobilized on the poly(styrene-divinylbenzene) copolymer containing $-\text{CH}_2\text{P}(\text{C}_6\text{H}_4\text{SO}_3\text{H})_2$ groups.
Ro, Ki Su; Woo, Seong Ihl (Dep. Chem. Eng., Korea Adv. Inst. Sci. and Technol., Seoul, S. Korea). Appl. Catal., 69(2), 169-75 (English) 1991.
CODEN: APCADI. ISSN: 0166-9834. DOCUMENT TYPE: Journal
CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes) Section cross-reference(s): 38
 $\text{RhCl}3.3\text{H}_2\text{O}$ and $\text{RhCl}(\text{CO})(\text{PPh}_3)_2$ are immobilized on a styrene-divinylbenzene copolymer contg. $-\text{CH}_2\text{P}(\text{C}_6\text{H}_4\text{SO}_3\text{H})_2$ (diphenylphosphine disulfonate) groups to give active and stable hydroformylation catalysts in an aq. phase. With these catalysts, propene undergoes rapid hydroformylation. The hydroformylation of propene, using the above catalysts, is investigated at 373 K and 5-50 atm in an aq. medium. The activity of the catalyst increases with increase in the total pressure of CO and H, and the rate of hydroformylation reaches a max. at phosphine-Rh at. ratio 8.7.

Keywords

propylene hydroformylation rhodium catalyst
phosphine sulfonate catalyst polymer immobilized
styrene polymer catalyst support

Index Entries

Hydroformylation catalysts
rhodium complexes immobilized on styrene polymers, for
propylene in aq. media
7440-16-6, complexes with sulfonated phosphinated
styrene-divinylbenzene copolymers
9003-70-7, phosphinated, sulfonated, rhodium complexes
catalysts, for aq. hydroformylation of propylene
78-84-2
123-72-8
formation of, in aq. hydroformylation of propylene in presence of
polymer-immobilized rhodium catalyst, selectivity of
115-07-1, reactions
hydroformylation of, polymer-immobilized rhodium catalysts for aq.

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114:43521

Immobilization of rhodium complexes with chiral cationic water soluble ligands on Nafion-H and other strongly acidic cation exchange resins.
Toth, Imre; Hanson, Brian E.; Davis, Mark E. (Dep. Chem., Virginia Polytech. Inst. and State Univ., Blacksburg, VA 24061, USA). J. Organomet. Chem., 397(1), 109-17 (English) 1990. CODEN: JORCAI.
ISSN: 0022-328X. DOCUMENT TYPE: Journal CA Section: 34
(Amino Acids, Peptides, and Proteins) Section cross-reference(s): 35, 67
Rhodium complexes of the chiral cationic water sol. ligands

(S,S)-R₂PCHMe(CH₂)_nCHMePR₂ (n = 0, 1, R = 4-Me₂NC₆H₄; n = 1, R = 4-Me₃N+C₆H₄) were immobilized on several cation exchange resins. All of these supported complexes catalyze the asym. hydrogenation of dehydroamino acid derivs. under appropriate conditions with no detectable loss of rhodium into the substrate phase. The rates and enantioselectivities of these hydrogenations depend not only on the ligand used but also on the nature of the exchange resin upon which the complex is immobilized. When the complexes were supported onto the acidic Nafion-H cation exchange resin, the resulting catalysts were easy to handle and gave optical yields comparable to those obtained with the nonsupported complexes in homogeneous soln. Thus, ion exchange resins may be used in the immobilization of asym. catalysts with no detectable rhodium leaching under batch conditions.

Keywords

immobilized cationic rhodium complex asym hydrogenation
dehydroamino acid hydrogenation polymer supported catalyst

Index Entries

Polymer-supported reagents
immobilized cationic rhodium complexes, for asym. hydrogenation
of dehydroamino acids
Hydrogenation catalysts
stereoselective, immobilized cationic rhodium complexes, for
dehydroamino acids
Hydrogenation
stereoselective, of dehydrophenylalanine derivs. with immobilized
cationic rhodium complexes
21462-02-2
55065-02-6
60676-51-9
asym. hydrogenation of, with immobilized cationic rhodium
complexes
9037-24-5
12612-37-2
118473-68-0
119822-67-2
exchange of, with water-sol. cationic rhodium complexes, for asym.
hydrogenation
1333-74-0, unspecified
hydrogenation, stereoselective, of dehydrophenylalanine derivs.
with immobilized cationic rhodium complexes
130928-39-1
130928-41-5
131220-86-5
immobilization of, on acidic cation exchange resins
130928-39-1, resin-supported
130928-41-5, resin-supported
131220-86-5, resin-supported
prepn. of, as catalyst for asym. hydrogenation of dehydroamino
acids
10172-89-1
10512-92-2
21156-62-7
prepn. of, by hydrogenation of dehydroamino acid with
immobilized water-sol. rhodium complexes

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113:4616

Continuous preparation of dipeptides by immobilized thermolysin.
Matsuno, Ryuichi; Nakanishi, Kazuhiro; Takeuchi, Akira (Daiwa Kasei
K. K., Japan). Jpn. Kokai Tokkyo Koho JP 02039895 A2 8 Feb 1990

Heisei, 7 pp. (Japan) CODEN: JKXXAF. CLASS: ICM: C12P021-02.
 APPLICATION: JP 88-190160 28 Jul 1988. DOCUMENT TYPE:
 Patent CA Section: 16 (Fermentation and Bioindustrial Chemistry)
 Thermolysin was immobilized on Amberlite XAD-7 resin and packed in
 a column (11' x 150 mm). This column was used for dipeptide
 formation from L-phenylalanine Me ester (100 mM) and
 N-benzyloxycarbonyl-L-aspartic acid (40 mM). A soln. contg. Ca²⁺ and
 the 2 reactants were pumped into the column at 25° at 7.5 mL/h. After
 23.5 h of usage, the column was washed with 0.01 M MES-NaOH (pH
 6.0) and EtOAc. The immobilized thermolysin was stable for >500 h.

Keywords

thermolysin dipeptide phenylalanine aspartate prepn

Index Entries

Peptides, preparation
 di-, prepn. of, immobilized thermolysin as catalyst in
 2577-90-4
 benzyloxycarbonylaspartate reaction with, immobilized thermolysin
 as catalyst in
 9073-78-3
 immobilized on XAD-7 resin, for dipeptide prepn.
 1152-61-0
 phenylalanine Me ester reaction with, immobilized thermolysin as
 catalyst in
 37380-43-1
 thermolysin immobilized on, for dipeptide prepn.

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112:99172
 Chymotrypsin-catalyzed transesterification in toluene using polystyrene
 resins containing hydrophilic groups and amino groups as a
 support.

Ohtani, Noritaka; Ohnishi, Hiroshi; Nagasaka, Yoshiyuki; Kamiyjo,
 Kenya; Yamasaki, Makoto (Min. Coll., Akita Univ., Akita 010, Japan).
 Kobunshi Ronbunshu, 46(5), 297-303 (Japanese) 1989. CODEN:
 KBRBA3. ISSN: 0386-2186. DOCUMENT TYPE: Journal CA Section:
 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s):
 9

Crosslinked polystyrene resins contg. N-butylamino,
 N,N-dimethylamino, and N,N-diethylamino groups with or without
 spacer chains were used as supports to make α-chymotrypsin (CT)
 function efficiently in org. solvents. The enzymic activity of immobilized
 CT was measured for transesterification of Ac-L-Phe-OEt with PrOH in
 PhMe. At low levels of loading of the amino groups, the activity of CT
 was poor. Introduction of hydrophilic groups such as quaternary
 ammonium salts or tetraethylene glycol to the amine-attaching resins,
 however, greatly enhanced the CT activity, while the hydrophilic groups
 alone did not exhibit significant improvements. With an increase in
 amine loading to the resin, the final yield of Ac-Phe-OPr decreased
 together with the increasing yield of hydrolysis product, Ac-Phe-OH.
 This tendency seems to be strengthened as the basicity of the amino
 groups becomes larger. The resin in which the N-butylamino groups
 were neutralized by Ac-Phe-OH afforded an excellent rate of formation
 of Ac-Phe-OPr without further accumulation of Ac-Phe-OH. The roles of
 amino groups and hydrophilic groups were discussed on the basis of
 these results.

Keywords

transesterification acetylphenylalanine immobilized chymotrypsin
 catalyst

Index Entries

Transesterification catalysts
 chymotrypsin immobilized on amine-contg. crosslinked
 polystyrenes, for acetylphenylalanine Et ester and propanol
 Transesterification
 of acetylphenylalanine Et ester with propanol in the presence of
 immobilized chymotrypsin
 2018-61-3
 formation of, in transesterification of Et ester with immobilized
 chymotrypsin
 9004-07-3
 immobilized on amine-contg. crosslinked polystyrenes,
 transesterification by, of acetylphenylalanine Et ester
 2361-97-9
 prepn. of, by transesterification of Et ester in the presence of
 immobilized chymotrypsin
 71-23-8, reactions
 transesterification by, of acetylphenylalanine Et ester in the
 presence of immobilized chymotrypsin
 2361-96-8
 transesterification of, with propanol in the presence of
 polystyrene-immobilized chymotrypsin

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112:63755
 Properties of photoimmobilized rhenium catalysts in the nitrobenzene
 hydrogenation reaction.
 Belousov, V. M.; Pal'chevskaya T. A.; Kotegov, K. V. (Inst. Fiz. Khim.,
 Kiev, USSR). Ukr. Khim. Zh. (Russ. Ed.), 55(8), 817-20 (Russian)
 1989. CODEN: UKZHAU. ISSN: 0041-6045. DOCUMENT TYPE:
 Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
 Reaction Mechanisms) Section cross-reference(s): 22, 74
 Photoimmobilization of $[\text{ReOCl}_4\text{L}_4]\text{Cl}_2$ (L = thiourea) was studied on
 silica gel or TiO_2 (anatase, rutile). Immobilization was carried out in a
 Mo-glass bulb contg. 50 mL 0.1 M benzophenone in iso-PrOH along
 with a portion of $[\text{ReOCl}_4\text{L}_4]\text{Cl}_2$ and the support. After irradiation for 2h at
 310 nm, the support contg. the immobilized Re complex was recovered
 by drying on a water bath and evacuating at 373 K. A parallel expt. was
 carried out with UV irradiation. Liq. phase hydrogenation of PhNO_2 was
 studied in DMF soln. at 0.1 MPa H_2 and 353 K. The diffuse reflection
 spectra of the UV-grafted catalyst indicate that Re(V) is reduced to
 Re(IV) during the immobilization process. Differences in catalytic
 activity between anatase and rutile samples are due to the different
 temps. used in pretreating these 2 supports (anatase 573, rutile 1273
 K). The anatase catalyst is reduced by H_2 immediately, but the rutile
 and silica gel catalysts are reduced only after 50-60 min.

Keywords

hydrogenation catalyst nitrobenzene
 rhenium thiourea surface complex catalyst
 photoimmobilization rhenium complex oxide support
 silica gel immobilized rhenium complex
 titania immobilized rhenium complex

Index Entries

Hydrogenation catalysts
 rhenium complexes, immobilized on oxide supports
 Silica gel, compounds
 reaction products, with rhenium thiourea complexes, catalyst, for
 hydrogenation of nitrobenzene

13463-67-7, reaction products with rhenium thiourea complexes
 21710-59-8, reaction products with oxides
 catalyst, for hydrogenation of nitrobenzene
 7440-15-5, uses and miscellaneous
 catalyst, oxide-supported, prepn. of photografted
 98-95-3, reactions
 hydrogenation of, on rhenium photografted catalyst

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111:194147

Hydroxylation of alkanes catalyzed by manganese tetraphenylporphyrin immobilized on imidazole-modified silica gel.
 Tatsumi, Takashi; Nakamura, Makoto; Tominaga, Hiroo (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Chem. Lett., (3), 419-20 (English) 1989. CODEN: CMLTAG. ISSN: 0366-7022. DOCUMENT TYPE: Journal CA Section: 24 (Alicyclic Compounds)
 Immobilization of Mn(TPP)Cl (TPP = tetraphenylporphyrin) onto 3-imidazolylpropyl-modified SiO₂ resulted in enhancement of its activity for hydroxylation of cyclohexane; the support prevented the complex from forming a dimer leading to oxidative destruction.

Keywords

cyclohexane hydroxylation catalyst
 manganese tetraphenylporphyrin immobilized imidazole silica catalyst

Index Entries

Hydroxylation catalysts
 manganese tetraphenylporphyrin immobilized on
 imidazole-modified silica gel, for alkanes
 32195-55-4, immobilized on imidazole-modified silica
 catalyst, for hydroxylation of cyclohexane
 110-82-7, reactions
 hydroxylation of, with hydrogen peroxide, catalyst for
 108-93-0, preparation
 108-94-1, preparation
 prepn. of, by hydroxylation of cyclohexane, catalyst for

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111:194074

Effects of ionenes on structure and catalytic activity of cobalt phthalocyanine. Part 4. Reaction mechanism and immobilization of the catalyst on latex particles.
 Van Herk, Alex M.; Van Streun, Karel H.; Van Welzen, Joke; German, Anton L. (Lab. Polym. Chem., Eindhoven Univ. Technol., Eindhoven 5600 MB, Neth.). Br. Polym. J., 21(2), 125-32 (English) 1989. CODEN: BPOJAB. ISSN: 0007-1641. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds) Section cross-reference(s): 22, 35
 The catalytic oxidn. of 2-mercaptoethanol was investigated kinetically for the system cobalt(II)phthalocyanine-tetra(sodium sulfonate) in the presence of poly(quaternary ammonium salt) at pH = 8.85. From a comparison with other kinetic data, a reaction mechanism could be proposed in which the specific effects of the polyelectrolyte become manifest. The effect of ionic strength on the catalytic activity was also studied. The sol. catalytic system was immobilized on latex particles by using a polymeric soap contg. quaternary ammonium groups. The latex particles with the ammonium groups at the surface were used to bond the cobalt catalyst by ionogenic interaction. Using this latex supported polymeric catalyst, the activity of its homogeneous counterpart could be maintained while at the same time immobilization was accomplished.

Keywords

cobalt ionene oxidn catalyst
 mercaptoethanol oxidn catalytic
 latex cobalt ammonium oxidn catalyst

Index Entries

Polymer-supported reagents
 cobalt phthalocyanine immobilized on latex particles contg.
 quaternary ammonium salt, for mercaptoethanol oxidn.
 Oxidation catalysts
 cobalt phthalocyanine with ionene, for mercaptoethanol
 Kinetics of oxidation
 Oxidation
 of mercaptoethanol in presence of cobalt complex and ionenes
 Ionene polymers
 oxidn. catalysts, contg. tetrasodium cobalt phthalocyanine
 tetrasulfonate, reaction mechanism and immobilization of,
 on latex particles
 27459-40-1
 catalyst with ionene, for oxidn. of mercaptoethanol
 27459-40-1, immobilized on latex contg. quaternary ammonium
 groups
 catalyst, for oxidn. of mercaptoethanol
 107082-96-2
 immobilization by, of cobalt phthalocyanine tetrasulfonate-ionene
 catalysts
 123374-93-6
 latex particles, immobilization by, of cobalt phthalocyanine
 tetrasulfonate-ionene catalysts
 32077-11-5
 oxidn. catalysts, contg. tetrasodium cobalt phthalocyanine
 tetrasulfonate, reaction mechanism and immobilization of,
 on latex particles
 60-24-2
 oxidn. of, cobalt catalyst immobilized on latex particles for
 1892-29-1
 prepn. of, by oxidn. of mercaptoethanol in presence of latex-bound
 cobalt complex

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111:155612

Oligomerization of 1,3-butadiene in the presence of
 chromium-containing gel-immobilized catalytic systems.
 Potapov, G. P.; Koksharova, A. A.; Punegov, V. V.; Sazhina, E. V.;
 Dzhemilev, U. M.; Artemov, A. N. (USSR). Fizikokhimiya Protsessov
 sinteza i Svoistva Polimerov, Gor'kii, 40-4 From: Ref. Zh., Khim. 1989,
 Abstr. No. 11S401(Russian) 1988. DOCUMENT TYPE: Journal CA
 Section: 39 (Synthetic Elastomers and Natural Rubber) Section
 cross-reference(s): 35
 Title only translated.

Keywords

butadiene oligomerization chromium immobilized catalyst

Index Entries

Gels
 chromium-contg. catalysts immobilized by, for oligomerization of
 butadiene
 Rubber, butadiene, preparation

oligomeric, prepn. of, in presence of chromium-contg.
gel-immobilized catalysts
Polymerization catalysts
oligomerization, chromium-contg. gel-immobilized systems, for
butadiene
7440-47-3, uses and miscellaneous
catalysts contg., gel-immobilized, for oligomerization of butadiene
9003-17-2
oligomeric, prepn. of, in presence of chromium-contg.
gel-immobilized catalysts
9003-17-2
rubber, oligomeric, prepn. of, in presence of chromium-contg.
gel-immobilized catalysts

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110:94448
Characteristics of oligomerization of ethylene on a gel-immobilized
catalytic system.
Popov, V. G.; Vasil'chenko, S. V. (Vses. Nauchno-Issled. Inst. Org.
Sint., Moscow, USSR). Kinet. Katal., 29(4), 981-3 (Russian) 1988.
CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal
CA Section: 23 (Aliphatic Compounds) Section cross-reference(s): 67
A gel-immobilized catalytic system composed of
dicyclopentadienyltitanium dichloride, alkylaluminum chlorides, and a
1,2-polybutadiene carrier ensured a const. rate of ethylene
oligomerization over a long reaction time. The mol.-mass distribution
of the oligomer differed from the Shultz-Flory distribution by increased
medium-wt. fractions.

Keywords

ethylene oligomerization gel immobilized catalytic
titanium aluminum gel immobilized catalyst

Index Entries

Polymerization catalysts
oligomerization, gel-immobilized aluminum and titanium
complexes, for ethylene
7550-45-0, uses and miscellaneous
catalysts from dichloroethylaluminum and, for oligomerization of
ethylene
9003-17-2
563-43-9, uses and miscellaneous
1271-19-8
gel-immobilized catalyst contg., for oligomerization of ethylene
74-85-1, reactions
oligomerization of, with gel-immobilized catalyst

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109:212710
Liquid-phase oxidation of cyclohexanone to dibasic acids with
immobilized cobalt catalyst.
Shen, Hung Chung; Weng, Hung Shan (Dep. Chem. Eng., Natl. Cheng
Kung Univ., Tainan 70101, Taiwan). Ind. Eng. Chem. Res., 27(12),
2246-54 (English) 1988. CODEN: IECRED. ISSN: 0888-5885.
DOCUMENT TYPE: Journal CA Section: 45 (Industrial Organic
Chemicals, Leather, Fats, and Waxes) Section cross-reference(s): 35
Liq.-phase oxidn. of cyclohexanone (I) to dicarboxylic acids was
studied in a batch autoclave reactor using HOAc as the solvent and
Co-form weak acid cation exchanger (Ionac-CC) as the catalyst at
83-118° and 5-15 atm. The length of induction period increased with
increasing I concn. (C) and decreased with increasing O partial

pressure, reaction temp., and amt. of catalyst (w). In the rapid reaction phase, the initial rate could be expressed as $r_0 = wkKCPO_2/(1 + KC)$. Water was detrimental to the catalyst due to promotion of the elution of Co, which resulted in deactivation. Adding Ac₂O reduced the amt. of cobalt ion eluted and also promoted the reaction rate. The catalyst could be reused several times without losing its catalytic ability significantly. The fractional yield of dibasic acids (including adipic, glutaric, and succinic acid) was 0.70-0.87, depending on the reaction conditions.

Keywords

kinetics oxidn cyclohexanone cobalt catalyst
cyclohexanone oxidn dicarboxylic acid
glutaric acid prepn cyclohexanone oxidn
succinic acid prepn cyclohexanone oxidn
adipic acid prepn cyclohexanone oxidn

Index Entries

Oxidation catalysts

cobalt-form cation exchangers, for cyclohexanone to dicarboxylic acids

Cation exchangers

catalysts, cobalt-contg., for oxidn. of cyclohexanone to dicarboxylic acids

Carboxylic acids, preparation

di-, C4-6, prepn. of, in liq.-phase oxidn. of cyclohexanone in presence of immobilized cobalt catalyst, kinetics in relation to

Kinetics of oxidation

liq.-phase, of cyclohexanone to dicarboxylic acids, in presence of immobilized cobalt catalysts

7440-48-4, uses and miscellaneous

catalysts, contg. cation exchangers, for liq.-phase oxidn. of cyclohexanone to dicarboxylic acids

108-24-7

catalysts, for liq.-phase oxidn. of cyclohexanone to dicarboxylic acids

81774-55-2

cobalt complexes, catalysts, for oxidn. of cyclohexanone to dicarboxylic acids in liq. phase

108-94-1, reactions

oxidn. of, to dicarboxylic acids in presence of immobilized cobalt catalysts in liq. phase, kinetics of

110-15-6, preparation

110-94-1

124-04-9, preparation

prepn. of, by liq.-phase oxidn. of cyclohexanone in presence of immobilized cobalt catalyst, kinetics in relation to

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109:157181

Immobilized sol of cobalt(III) hydroxide as an efficient catalyst of water oxidation to dioxygen by the tris(bipyridine)ruthenium(III) complex.

Elizarova, G. L.; Matvienko, L. G.; Lozhkina, N. V.; Parmon, V. N. (Int. Catal., Novosibirsk 630090, USSR). React. Kinet. Catal. Lett., 36(2), 331-6 (English) 1988. CODEN: RKCLAU. ISSN: 0304-4122.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Catalysts for H₂O oxidn. to O₂ by Ru(bpy)₃³⁺ were obtained by immobilization of colloidal Co(OH)₃ on supports of the hydroxide types. These supports are able either to enhance (Al(III), Bi(III), Sn(IV), and

Ce(IV) hydroxides) or to weaken (Fe(III) and Mn(IV) hydroxides) the catalytic efficiency of the initial sol. The possible nature of the influence of the support is discussed.

Keywords

water oxidn ruthenium bipyridine cobalt hydroxide
cobalt hydroxide colloid catalyst oxidn water
support cobalt hydroxide catalyst efficiency

Index Entries

Oxidation catalysts
supports, cobalt hydroxide colloid immobilized on metal
hydroxide, for oxidn. of water by ruthenium bipyridine
complex, effect of support material on efficiency of
1304-76-3, uses and miscellaneous
1306-38-3, uses and miscellaneous
1309-37-1, uses and miscellaneous
1313-13-9, uses and miscellaneous
13463-67-7, uses and miscellaneous
18282-10-5
catalysts from cobalt hydroxide colloid immobilized on, for oxidn.
of water by ruthenium bipyridine complex
1307-86-4
catalysts, immobilized on hydroxide support, for oxidn. of water by
ruthenium bipyridine complex, effect of supports material on
efficiency of
18955-01-6
oxidn. by, of water, catalyzed by cobalt hydroxide colloid
immobilized on metal hydroxide support
7732-18-5, reactions
oxidn. of, by ruthenium(III) bipyridine complex, catalyzed by cobalt
hydroxide sols immobilized on metal hydroxide supports

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107:184443

Photogeneration of hydrogen from water on platinum catalyst fixed on
bilayer lipid membrane in the system
Rh(dipy)33+-Ru(dipy)32+-EDTA.
Maier, V. E.; Shafirovich, V. Ya. (Inst. Khim. Fiz., Chernogolovka,
USSR). Kinet. Katal., 28(4), 839-43 (Russian) 1987. CODEN:
KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section:
67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 74
Catalysts formed by Rh(bipy)32+ (bipy = 2,2'-bipyridine) at sufficient Pt
concns. induce almost complete splitting of H2 from H2O when the
reaction is carried out in the interior of vesicles and in the exterior soln.
Rate consts. for various steps of the electron transfer process between
Rh(bipy)2+ and the Pt centers were detd. by pulse photolysis and can
be used to describe the H2 generation process.

Keywords

rhodium bipyridine water splitting catalyst
ruthenium rhodium bipyridine photocatalyst
hydrogen generation bipyridine photocatalyst
EDTA ruthenium rhodium bipyridine photocatalyst
bilayer lipid platinum immobilized photocatalyst

Index Entries

Kinetics of electron exchange
between rhodium(II) bipyridine complex and platinum centers

immobilized in lipid bilayer membrane, water splitting in relation to
 Reduction catalysts
 photochem., rhodium and ruthenium bipyridine complexes and EDTA and bilayer lipid-immobilized platinum, for water splitting
 2797-68-4
 bilayer lipid membranes, contg. immobilized platinum, photochem. water splitting system in relation to
 18955-01-6
 75924-14-0
 catalysts, for photochem. water splitting
 7440-06-4, uses and miscellaneous
 catalysts, immobilized in bilayer lipid membrane in presence of rhodium(II) bipyridine complex, water splitting in relation to
 1333-74-0, preparation
 generation of, from water, rhodium and ruthenium bipyridine complexes and bilayer lipid-immobilized platinum in photochem.
 47780-17-6
 60-00-4, uses and miscellaneous
 photochem. water splitting catalysis system contg.
 7732-18-5, uses and miscellaneous
 splitting of, rhodium and ruthenium bipyridine complex and bilayer lipid-immobilized platinum catalysts in

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107:136805

Multistage method and reactor for biocatalytic transformation of material.

Caro, Thomas (Fed. Rep. Ger.). Ger. Offen. DE 3603792 A1 13 Aug 1987, 7 pp. (Germany) CODEN: GWXXBX. CLASS: ICM: B01J008-04. ICS: C12N011-00; C08B030-00; C02F003-28; C02F003-30. APPLICATION: DE 86-3603792 7 Feb 1986.

DOCUMENT TYPE: Patent CA Section: 48 (Unit Operations and Processes) Section cross-reference(s): 16, 17, 52, 60

Solns. are subjected to biocatalytic transformation in a staged cylindrical reactor with multiple vertical sections sepd. from each other by inverted funnel-shaped partitions. Each section contains immobilized enzymes or microorganisms as biocatalysts, where these migrate downward countercurrently to the substrate which is fed at the reactor base and overflows into the higher section. Gas which is formed by reaction can be collected in the inverted funnel above each section and discharged through a central line. The system is suitable for wastewater treatment, enzyme prodn., prodn. of biol. products including biogas, syrup prodn., saccharification of starch or milk, and clarification of fruit and vegetable juices.

Keywords

bio catalyst immobilized stage reactor
 biogas prodn staged reaction system
 enzyme prodn staged reaction system
 starch saccharification biol reaction system
 milk saccharification biol reaction system
 juice clarification biol reaction system

Index Entries

Fruit and vegetable juices
 clarification of, staged reaction system with immobilized enzymes or microorganisms for
 Microorganism
 immobilized, staged biocatalytic reaction system contg.

Saccharification

staged reaction system with immobilized enzymes or
microorganisms for

Reactors

biocatalytic, staged, with multiple vertical sections sepd. by inverted
funnel-shaped partitions and contg. immobilized enzymes
or microorganisms

Wastewater treatment

biol., staged reaction system with immobilized enzymes or
microorganisms for

Enzymes

immobilized, stage biocatalytic reaction system contg.

74-82-8, preparation

prodn. of, staged reaction system with immobilized enzymes or
microorganisms for

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107:132610

Technique for continuous performance of a reaction.

Winkler, Michael; Clift, Roland (University of Surrey, UK). Brit. UK Pat.

Appl. GB 2180466 A1 1 Apr 1987, 6 pp. (United Kingdom) CODEN:

BAXXDU. CLASS: ICM: B01J019-18. ICS: B01J020-30;

B01J035-06; B01J038-48. APPLICATION: GB 86-19309 7 Aug 1986.

PRIORITY: GB 85-19835 7 Aug 1985. DOCUMENT TYPE: Patent CA

Section: 16 (Fermentation and Bioindustrial Chemistry) Section

cross-reference(s): 7

A continuous reaction system comprising moving a continuous strip
having a reactant or a catalyst through ³1 reactor vessels is designed
to provide good solid-liq. contact in small-scale chem. or biol.

reactions. A continuous nylon ribbon having immobilized
Saccharomyces cerevisiae 10 g was loaded and circulated in a
reactor at a speed of 10 mm/s while 10% wt./vol. glucose soln. was
circulated through the device at 0.75 mL/s. The glucose concn. was
reduced at a steady rate of 0.5%/h after an initial lag.

Keywords

continuous reaction strip reactant catalyst
yeast immobilization ribbon continuous fermn
lactase immobilization ribbon continuous hydrolysis

Index Entries

Adsorption

continuous, of ethanol, with moving nylon ribbon having
immobilized zeolite

Zeolites, biological studies

immobilization of, on nylon ribbon for continuous ethanol adsorption

Saccharomyces cerevisiae

immobilization of, on nylon ribbon strip for continuous fermn.

Animal cell

Bacteria

Fungi

Plant cell

Yeast

Coenzymes

Enzymes

immobilization of, on strip for continuous reaction

Immobilization, biochemical

of enzyme or microorganism, on nylon ribbon for continuous
reaction

Bands and Ribbons

reactant or catalyst immobilized on, for small scale continuous
chem. or biol. reactions

Fermentation

continuous, with moving nylon ribbon having immobilized yeast

Fermentation apparatus

fermentor, for continuous fermn., contg. reactant or catalyst on moving strip

64-17-5, properties

adsorption of, from fermn. liquor with zeolite immobilized on nylon ribbon

63-42-3

hydrolysis of, with immobilized lactase on continuous ribbon

9031-11-2

immobilization of, on nylon ribbon for continuous lactose hydrolysis

50-99-7, biological studies

metab. of, by yeast immobilized on continuous ribbon

1335-30-4

zeolites, immobilization of, on nylon ribbon for continuous ethanol adsorption

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107:84591

Effect of immobilization on catalytic properties of manganese tetrakis(p-tetraaminophenyl)porphyrinate acetate.

Solov'eva, A. B.; Samokhvalova, A. I.; Lebedeva, T. S.; Pshezhetskii, V. S.; Karmilova, L. V.; Enikolopyan, N. S. (Inst. Khim. Fiz., Moscow, USSR). Dokl. Akad. Nauk SSSR, 290(6), 1383-6 [Chem.] (Russian) 1986. CODEN: DANKAS. ISSN: 0002-3264. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic

Reaction Mechanisms) Section cross-reference(s): 32, 35

The catalytic activity of the title Mn porphyrin complex for cholesterol oxidn. is enhanced by binding the porphyrin to a sol. polymeric carrier.

The immobilization is carried out by copolymn. of mixts. contg. Mn porphyrin-acrylamide and methacrylates, or 4-vinylpyridine.

Keywords

manganese porphyrin polymer immobilized catalyst

oxidn catalyst cholesterol manganese porphyrin

Index Entries

Catalysts and Catalysis

manganese porphyrin complex, polymer-immobilized

Oxidation catalysts

manganese porphyrin, polymer-immobilized, for cholesterol

Kinetics of oxidation

of cholesterol, on manganese porphyrin polymer-immobilized

complex catalyst

109784-09-0

catalyst, for oxidn. of cholesterol

80-62-6, reaction products with manganese acrylimido porphyrin

complex

97-88-1, reaction products with manganese acrylimido porphyrin

complex

100-43-6, reaction products with manganese acrylimido porphyrin

complex

688-84-6, reaction products with manganese acrylimido porphyrin

complex

26100-41-4, reaction products with manganese acrylimido porphyrin

complex

catalysts, for oxidn. of cholesterol

57-88-5, reactions

oxidn. of, on manganese porphyrin polymer-immobilized catalysts

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107:76069

Process and apparatus for enhancing biological and chemical reactions from high area inorganic base silica on fibers.
 Clyde, Robert A. (USA). PCT Int. Appl. WO 8700199 A1 15 Jan 1987, 35 pp. DESIGNATED STATES: W: AU, US; RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE. (World Intellectual Property Organization)
 CODEN: PIXXD2. CLASS: ICM: C12N011-14. ICS: C12N011-08; C12N011-12; C12M001-40; C12M001-00; C12M001-02; C12M001-04; C12M001-10; C12M001-16; C12M001-18; B01J008-02; B01J023-00; B01J023-42; B01J023-44; B01J035-02.
 APPLICATION: WO 86-US1427 10 Jul 1986. PRIORITY: US 85-753727 10 Jul 1985. DOCUMENT TYPE: Patent CA Section: 16 (Fermentation and Bioindustrial Chemistry) Section cross-reference(s): 60

A process using an app. comprising microbes, enzymes, or catalytic metals entrapped in a high area inorg. material-treated fibrous base (e.g. diatomaceous earth) is designed for enhancing chem. and biol. reactions. *Pseudomonas fluorescens* Immobilized on Dicalite 4200 entrapped in Orlon and Dacron fibers was used in removing metals from wastewater and decomp. Cl compd.

Keywords

fiber coating microbe adherence diatomaceous earth
 Orlon Dacron coating Dicalite *Pseudomonas* adherence
 reactor immobilized *Pseudomonas* wastewater treatment

Index Entries

Zymomonas mobilis
 Dicalite-treated fiber-immobilized, fermn. of sugar by
 Catalysts and Catalysis
 Microorganism
 Enzymes
 absorption of, on kieselguhr- or clay-treated fiber, process and app. for enhanced biochem. reactions in relation to.
 Fibrous materials
 clay- or kieselguhr-treated, in process and app. for enhanced absorption of enzyme or catalyst or microbe
 Kieselguhr
 Clays, biological studies
 fiber treated with, in process and app. for enhanced adsorption of enzyme or catalyst or microbe
Phanerochaete chrysosporium
 immobilization of, on Dicalite-treated fiber, for chlorine and lignin degrdn. and pulp mill effluent decoloration
Pseudomonas fluorescens
 immobilization of, on Dicalite-treated fiber, for wastewater metal removal and chlorine compd. decompn.
Kluyveromyces fragilis
 immobilization of, on Dicalite-treated fibers, for fermn. of sugar
 Immobilization, biochemical
 of enzymes or catalysts or microbe on kieselguhr- or clay-treated fiber, process and app. for enhanced
 Reactors
 biocatalytic, clay- or kieselguhr-treated fiber in, enhanced absorption of enzyme or catalyst on
 Synthetic fibers
 ceramic, clay- or kieselguhr-treated, in process and app. for enhanced absorption of enzyme or catalyst or microbe
 Fermentation apparatus
 fermentor, clay- or kieselguhr-treated fiber in, improved absorption of microbe on
 Ceramic materials and wares

fibers, clay- or kieselguhr-treated, in process and app. for
enhanced absorption of enzyme or catalyst or microbe
Heat-exchange apparatus
tubular, in app. contg. silica satd. fiber, for enhanced absorption of
enzyme or catalyst or microbe
7440-02-0, biological studies
7440-05-3, biological studies
7440-06-4, biological studies
7440-61-1, biological studies
absorption of, on kieselguhr- or clay-treated fiber, process and app.
for enhanced biochem. reactions in relation to.
7631-86-9, biological studies
fiber satd. with, for enhanced absorption of enzyme or catalyst or
microbe, app. having

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114:20632

Bioelectrode manufacture by integrated circuit fabrication technique
and electrolytic process.

Sethi, Rajinder Singh; Yonhin, Foo Yueh Yin; Lowe, Christopher Robin
(Plessey Overseas Ltd., UK). Eur. Pat. Appl. EP 387026 A2 12 Sep
1990, 10 pp. DESIGNATED STATES: R: DE, FR, IT, NL. (European

Patent Organization) CODEN: EPXXDW. CLASS: ICM:

C12M001-40. ICA: G01N033-543; G01N027-327; G01N027-416;

C12Q001-54. APPLICATION: EP 90-302417 7 Mar 1990. PRIORITY:

GB 89-5507 10 Mar 1989. DOCUMENT TYPE: Patent CA Section: 9

(Biochemical Methods)

A biosensor device comprises ³2 spaced pairs of electrodes
supported on a surface of elec. insulating material on a Si substrate; ³1
of the electrode pairs includes a body of immobilized reagent material
incorporating an active biol. catalyst (e.g. enzyme, antigen, antibody, or
living cell material). The immobilized reagent body is positioned
between the electrode pair to constitute a working electrode structure.
The support surface can carry a 3rd electrode pair to constitute a ref.
electrode structure. The electrodes are formed as thin film layers by an
integrated circuit fabrication technique. The biol. catalyst material is
deposited by an electrolytic process. Illustrative diagrams for the elec.
conductor arrangement on an elec. insulating material and for the
process of biosensor construction are given. Thus, an integrated dual
enzyme biosensor device was constructed for measuring glucose and
galactose in a mixt. contg. both sugars.

Keywords

bioelectrode integrated circuit fabrication
biol catalyst electrolytic deposition bioelectrode

Index Entries

Platinum-group metals

bioelectrodes contg., biol. catalyst immobilization on, for detg.
analytes in mixt.

Electrolysis

biol. catalyst immobilization by, on bioelectrodes for detg. analytes
in mixt.

Cell

immobilization of, on bioelectrode, for detg. analytes in mixt.

Antibodies

Antigens

Enzymes

immobilization of, on bioelectrodes, for detg. analytes in mixt.

Electrodes

bio-, manuf. of, by integrated circuit fabrication technique, biol.
catalyst immobilization in relation to

7440-06-4, uses and miscellaneous
 7440-57-5, uses and miscellaneous
 bioelectrodes contg., biol. catalyst immobilization on, for detg.
 analytes in mixt.
 59-23-4, analysis
 detn. of, with bioelectrode contg. immobilized galactose oxidase
 50-99-7, analysis
 detn. of, with bioelectrode contg. immobilized glucose oxidase
 9001-37-0, immobilized
 on metal electrodes, for detg. analytes in mixt.

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113:211373

Hydroformylation of olefins and derivatives using heterogeneous
 catalysts containing surface-immobilized solutions of rhodium
 complexes.

Davis, Mark Edward; Arhancet, Juan Pedro; Hanson, Brian Ernest
 (Virginia Tech Intellectual Properties, Inc., USA). Eur. Pat. Appl. EP
 372615 A2 13 Jun 1990, 11 pp. DESIGNATED STATES: R: BE, DE,
 ES, FR, GB, IT, NL, SE. (European Patent Organization) CODEN:
 EPXXDW. CLASS: ICM: C07C045-50. ICS: B01J031-24.

APPLICATION: EP 89-202988 23 Nov 1989. PRIORITY: US
 88-276730 28 Nov 1988; US 88-276825 28 Nov 1988. DOCUMENT

TYPE: Patent CA Section: 23 (Aliphatic Compounds)

Olefinic org. compds. are hydroformylated by CO/H mixts. using
 heterogeneous catalysts, upon the solid surface of which are
 immobilized solns. of 1 or more Rh complexes in a polar solvent which
 is essentially immiscible in the org. reactant phase. For example, the
 complex $RhH(CO)[P(C_6H_4SO_3Na-m)_3]_3$ was prepd. and loaded onto a
 controlled-pore glass (av. pore diam. 237 Å), and the catalyst was
 hydrated with H₂O(g) to 7.5% H₂O (vs. total wt.). Hydroformylation of
 1-octene in cyclohexane by 1:1 (mol) CO/H₂ over this catalyst at 750
 psig and 70° for 5 h gave 62.5% conversion and 2.7 linear/branched C₉
 aldehyde ratio.

Keywords

hydroformylation olefin heterogeneous rhodium catalyst
 aldehyde

Index Entries

Hydroformylation catalysts

immobilized solns. of rhodium complexes on solid surfaces, for
 alkenes and derivs. to aldehydes

Hydroformylation

of alkenes and derivs. to aldehydes

Aldehydes, preparation

prepn. of, by hydroformylation of olefins using heterogeneous
 rhodium catalysts

Glass, oxide

support, for immobilized solns. of rhodium complexes as catalysts
 for hydroformylation of olefins

77-73-6

111-66-0

143-28-2

488-10-8

hydroformylation of, using heterogeneous rhodium catalyst

630-08-0, unspecified

hydroformylation, of alkenes and derivs. to aldehydes

7440-16-6, complexes

immobilized solns. of, as heterogeneous catalysts for

hydroformylation of olefins

7732-18-5, properties

polar soln. phase, for rhodium-based hydroformylation catalyst
109427-00-1
prepn. of, as catalyst for hydroformylation of olefins
25896-97-3
prepn. of, by hydroformylation of dicyclopentadiene
130140-24-8
prepn. of, by hydroformylation of jasmone
124-19-6
prepn. of, by hydroformylation of octene
75543-80-5
prepn. of, by hydroformylation of oleyl alc.
63995-70-0
prepn., soly., and reaction of, with rhodium dicarbonyl
acetylacetonate
14874-82-9
reaction of, with sodium triphenylphosphine trisulfonate
56-81-5, properties
107-21-1, properties
soly. of sodium triphenylphosphinetrisulfonate in
603-35-0, reactions
sulfonation of

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113:172733
Peptide synthesis in a triphasic medium catalyzed by papain
immobilized on a crosslinked polystyrene support.
Jayakumari, V. G.; Pillai, V. N. Rajasekharan (Dep. Chem., Calicut
Univ., Kerala 673 635, India). Indian J. Chem., Sect. B, 29B(6), 514-17
(English) 1990. CODEN: IJSBDB. ISSN: 0376-4699. DOCUMENT
TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins)
Section cross-reference(s): 7
Papain immobilized on a crosslinked polystyrene support with a
-CH₂NHCO(CH₂)₂- spacer arm between the polymer support and the
enzyme has been useful for the synthesis of peptides in a triphasic
medium consisting of an immiscible org. solvent, water and insol.
polymer support. Employing this technique, a no. of peptides have
been synthesized in 30-60% isolable yields and fully characterized by
spectral and anal. data. The conditions of peptide formation resemble
those of the triphasic catalysis involving polymer-supported phase
transfer catalysis. The functionalization procedures for the polymer, the
method of immobilization, enzyme activity assay and the synthetic
procedures are also described.

Keywords

papain immobilized triphasic peptide synthesis
polystyrene immobilized papain peptide synthesis

Index Entries

Peptides, preparation
prepn. of, by peptide coupling in triphasic medium catalyzed by
immobilized papain
108-30-5, reactions
acylation by, of aminomethylated polystyrene
9001-73-4
immobilized, catalyst, for peptide synthesis in triphasic medium
623-33-6
13734-41-3
peptide coupling reaction of, in triphasic medium catalyzed by
immobilized papain
110-15-6, amide with amino methylated polystyrene
prepn. and coupling of, with papain
85-41-6, polymer-bound

prepn. and hydrogenolysis of
 9003-53-6, aminomethylated
 prepn. and N-acylation of, with succinic anhydride
 2280-66-2
 3757-98-0
 4526-92-5
 5874-73-7
 41889-06-9
 63473-46-1
 prepn. of, by peptide coupling in triphasic medium catalyzed by
 immobilized papain
 9003-53-6
 reaction of, with (chloromethyl)phthalimide
 17564-64-6
 reaction of, with polystyrene

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113:24032

Metal complexes in catalytic transformations of olefins. 2. Structure of phosphine ligands fixed on silica surface; a nickel catalyst for ethylene dimerization.

Furman, D. B.; Ivanov, A. O.; Olenin, A. Yu.; Belyankin, A. Yu.; Ignatenko, A. V.; Bogdanov, V. S.; Lisichkin, G. V.; Bragin, O. V. (Inst. Org. Khim. im. Zelinskogo, Moscow, USSR). Izv. Akad. Nauk SSSR, Ser. Khim., (12), 2674-8 (Russian) 1989. CODEN: IASKA6. ISSN: 0002-3353. DOCUMENT TYPE: Journal CA Section: 29

(Organometallic and Organometalloidal Compounds) Section

cross-reference(s): 23, 67

Treating silochrome with (EtO)₃Si(CH₂)₃NH₂ in C₆H₆ gave a silica gel-bound deriv., which reacted with Ph₂PCl in C₆H₆ contg. Et₃N at 60° to give [bis(diphenylphosphino)amino]propylated silochrome (I). I, also prepd. by reversing the order of these reactions, formed complexes with Ni(PPh₃)_n (n = 3,4) which catalyzed C₂H₄ dimerization to give butenes with 94.7% selectivity in C₆H₆ contg. Et₂AlCl.

Keywords

silica bound nickel phosphine catalyst
 aminophosphine nickel immobilized catalyst dimerization
 ethylene dimerization catalyst aminophosphinenickel immobilized

Index Entries

Silica gel, reactions
 reaction of, with (aminopropyl)triethoxysilanes, in synthesis of immobilized (aminophosphine)nickel complex catalysts for dimerization of ethylene
 Dimerization catalysts
 silica-bound (aminophosphine)nickel complexes, for ethylene
 Functional groups
 [bis(diphenylphosphino)amino]propyl, silica gel contg., complexes with (triphenylphosphine)nickel, dimerization catalysts
 Functional groups
 aminopropyl, silica gel contg., complexes with chlorodiphenylphosphine, dimerization catalysts
 74-85-1, reactions
 dimerization of, silica-bound (aminophosphine)nickel complex catalysts for
 919-30-2
 immobilization of, on silica gel, and reaction of, with chlorotriphenylphosphine
 15133-82-1
 25136-46-3
 ligand substitution of, with silica-bound

[[bis(diphenylphosphinol)amino]propyl]triethoxysilane
127740-04-9

prepn. and immobilization of, on silica gel

15133-82-1, silica-bound

25136-46-3, silica-bound

prepn. of, as catalyst for dimerization of ethylene

25167-67-3

prepn. of, by dimerization of ethylene, catalysts for

1079-66-9

reaction of, with (aminopropyl)triethoxysilane and its silica-bound analog

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113:6946

Study of immobilized catalysts. XXIV. Catalysts resulting from graft polymerization of metal-containing monomers onto polyethylene.

Savost'yanov, V. S.; Pomogailo, A. D.; Ponomarev, A. N. (Inst. Energ. Probl. Khim. Fiz., Chernogolovka, USSR). Kinet. Katal., 30(6), 1414-20 (Russian) 1989. CODEN: KNKTA4. ISSN: 0453-8811.

DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 38

Metal-contg. graft copolymers were obtained by graft polymn. of acrylic acid transition metal salts or acrylamide transition metal complexes onto polyethylene. The valence state, coordination, and ligand environment of the metal in the graft copolymer corresponded to that in the starting monomer. Graft polymn. occurred through only 1 of the available vinyl groups of the salts and complexes, and the graft chains contained unpolymd. vinyl groups. Graft copolymers contg. Ni(II) and Ti(IV) had significantly higher catalytic activity in the dimerization and polymn. of ethylene than analogous catalysts immobilized through chem. modification reactions of a polymer support.

Keywords

metal contg graft copolymer

polymn catalyst metal contg copolymer

dimerization catalyst metal contg copolymer

polyethylene acrylamide metal complex grafted

acrylate metal salt grafted polyethylene

ethylene polymn immobilized metal catalyst

Index Entries

Transition metals, uses and miscellaneous

catalysts, polymer-supported, prepn. of, by graft polymn. of acrylic salts and complexes

Polymer-supported reagents

catalysts, transition metals, prepn. of, by graft polymn. of acrylic salts and complexes

Dimerization catalysts

Polymerization catalysts

transition metals, immobilized, prepd. by graft polymn. of acrylic salts and complexes, for ethylene, activity of

111866-37-6

122159-82-4

122159-83-5

122159-84-6

122159-85-7

127602-32-8

127602-89-5

127602-90-8

prepn. and structure and catalytic activity of

9002-88-4

16482-32-9

prepn. of, transition metal-contg. acrylic graft copolymer as immobilized catalyst for

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112:158405

Immobilized iodosobenzoate catalysts for the cleavage of reactive phosphates.

Moss, Robert A.; Chung, Yong Chan (Dep. Chem., Rutgers, State Univ., New Brunswick, NJ 08903, USA). J. Org. Chem., 55(7), 2064-9 (English) 1990. CODEN: JOCEAH. ISSN: 0022-3263. DOCUMENT TYPE: Journal CA Section: 29 (Organometallic and Organometalloidal Compounds) Section cross-reference(s): 25, 67

Titanium dioxide and nylon covalently supported iodosobenzoate reagents I (R = support) were prepd. Both are good catalysts for the cleavage of p-nitrophenyl di-Ph phosphate (PNPDPP) under heterogeneous aq. conditions at pH 8. The kinetics of the cleavage reactions were characterized in the presence of excess substrate (turnover conditions), and in the presence of dil. cetyltrimethylammonium chloride, which enhances both PNPDPP cleavage and catalyst turnover.

Keywords

phosphate phosphorolysis catalyst immobilized iodosobenzoate
titania support iodosobenzoate phosphorolysis catalyst
nylon support iodosobenzoate phosphorolysis catalyst
cleavage nitrophenyl Ph phosphate kinetics

Index Entries

Solvolysis catalysts
immobilized iodosobenzoates, for reactive phosphates
Solvolysis
phosphorolysis, of nitrophenyl di-Ph phosphate
Kinetics of solvolysis
phosphorolysis, of nitrophenyl di-Ph phosphate in presence of
immobilized iodosobenzoate catalysts
99665-71-1
amination of
10359-36-1
cleavage of, catalysts for, kinetics of
2941-78-8
diazotization and subsequent iodination of
25038-54-4, reactions
imino ether formation from
125735-31-1, titania-bound
125735-32-2, nylon-6-bound
prepn. and catalysis by, for cleavage of reactive phosphates
125762-78-9, titania-bound
prepn. and reaction of, with tertiary arom. amines
52548-14-8
103440-52-4
123191-35-5
125735-34-4
125735-35-5, nylon-6-bound
prepn. of, as intermediate for phosphorolysis catalyst
109-55-7
reaction of, with nylon-6
13883-39-1
reaction of, with titania

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112:22221

Electron transfer function of kerateine gel and conjugated redox reaction by using the kerateine-immobilized membrane.
 Nakamura, Yoshiharu; Yamada, Masaru; Miura, Junichiro; Hirota, Koji; Hori, Teruo (Fac. Eng., Fukui Univ., Fukui 910, Japan). J. Polym. Sci., Part A: Polym. Chem., 27(9), 2883-95 (English) 1989. CODEN: JPACEC. ISSN: 0887-624X. DOCUMENT TYPE: Journal CA
 Section: 40 (Textiles and Fibers) Section cross-reference(s): 37, 45
 Keratein gel, prepd. by reducing wool keratin with alk. 2-mercaptoethanol-urea soln. and by partially reoxidizing the dissolved keratein, reduced Fe(III) to Fe(II). Redn. of Fe(III) was enhanced by addn. of Cu(II). Redn. of methylene blue (I) to leuco I with thioglycolic acid (II) as a model compd. of wool thiol groups was investigated in the presence of Cu(II) and intercuticular cementing material (dCu) extd. from wool fiber. It was confirmed that Cu(II) was a catalyst for the redn. of I and the dCu contg. Cu ion acted as a carrier for electron transfer. Some keratein/dCu-immobilized hydrophilic polyurethane membranes were prepd. A conjugated redox reaction combining the redn. of I and the oxidn. of II was carried out across these membranes.

Keywords

wool keratein gel redn iron
 polyurethane membrane keratein immobilized redox
 methylene blue redn keratein membrane
 thioglycolic acid oxidn keratein membrane
 copper catalyst redn iron keratein
 redox reaction keratein immobilized polyurethane
 intercuticular cementing material wool redn
 electron transfer keratein gel

Index Entries

Electron exchange
 by wool keratein gel
 Reduction catalysts
 cupric ion, for ferric ion by wool keratein gel
 Urethane polymers, uses and miscellaneous
 membranes, contg. kerateins, redox reaction across
 Reduction
 of ferric ion, by wool keratein gel
 Redox reaction
 of methylene blue and thioglycolic acid across kerateins
 immobilized in polyurethane membranes
 Keratins
 kerateins, gel, electron transfer function of, conjugated redox
 reaction with immobilizing membrane in relation to
 7440-50-8, uses and miscellaneous
 catalysts, for redn. of trivalent iron by wool keratein gel
 111-40-0, reaction products with polyethylene glycol
 bis(isocyanatohexylcarbamate) and imidazole and keratein or wool
 intercuticular cementing material
 288-32-4, reaction products with polyethylene glycol
 bis(isocyanatohexylcarbamate) and diethylenetriamine and keratein or
 wool intercuticular cementing material
 35603-43-1, reaction products with imidazole and diethylenetriamine
 and keratein or intercuticular cementing material
 membranes, conjugated redox reactions across
 7439-89-6, reactions
 redn. of trivalent, by wool keratein gel, cupric ion as catalyst in
 68-11-1, reactions
 redox reaction of, with methylene blue, across keratein
 immobilized in polyurethane membrane
 61-73-4
 redox reaction of, with thioglycolic acid, across keratein

immobilized in polyurethane membrane

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108:222185

Polymerization of epoxypropyl carbazole in the presence of gel-immobilized chromium complexes containing boron trifluoride. Potapov, G. P.; Koksharova, A. A.; Artemov, A. N. (USSR). Fiz.-khim. Osnovy Sintez i Pererab. Polimerov, Gor'kii, 33-5 From: Ref. Zh., Khim. 1988, Abstr. No. 3S631(Russian) 1987. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Title only translated.

Keywords

epoxypropyl carbazole polymn chromium catalyst
boron trifluoride chromium polymn catalyst

Index Entries

Polymerization catalysts
chromium complexes contg. boron trifluoride, for epoxypropyl carbazole
Polymerization
of epoxypropyl carbazole, in presence of gel-immobilized chromium complexes contg. boron trifluoride
Epoxy resins, preparation
carbazole group-contg., prepn. of, in presence of gel-immobilized chromium complexes contg. boron trifluoride
7440-47-3, uses and miscellaneous
catalysts, gel-immobilized, contg. boron trifluoride, for polymn. of epoxypropyl carbazole
7637-07-2, uses and miscellaneous
catalysts, gel-immobilized, contg. chromium, for polymn. of epoxypropyl carbazole
55774-96-4
prepn. of, in presence of gel-immobilized chromium complexes contg. boron trifluoride

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108:93919

Hydrogenation of some organic compounds catalyzed by platinum and palladium complexes. Shopov, D.; Rakovski, S. (Inst. Kinet. Catal., Sofia 1113, Bulg.). Homogeneous Heterog. Catal., Proc. Int. Symp. Relat. Homogeneous Heterog. Catal., 5th, 601-15. Edited by: Ermakov, Yu. I.; Likholobov, V. A. VNU Sci. Press: Utrecht, Neth. (English) 1986. CODEN: 56DTA9. DOCUMENT TYPE: Conference CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 29
A lecture on the synthesis of Pt and Pd complexes with org. dyes immobilized on some org. and inorg. supports. The catalytic activity of these complexes was studied in the hydrogenation of nitro groups, conjugated double bonds and acetylenic bonds.

Keywords

platinum palladium immobilized catalyst lecture
hydrogenation catalyst platinum palladium lecture

Index Entries

Alkynes
Nitro compounds
Alkenes, reactions

hydrogenation of, immobilized platinum or palladium catalyst for
Hydrogenation catalysts
platinum and palladium complexes immobilized on org. or inorg.
supports, for org. compds.
7440-05-3, complexes
7440-06-4, complexes
immobilized catalyst, for hydrogenation of org. compds.

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108:36502

Process for preparation of hydroxyaspartame and derivatives..
Chmurny, Alan Bruce; Gross, Akiva Tuvia; Kupper, Robert Joe;
Woodbury, Richard Paul; Roberts, Rowena Lisa (Grace, W. R., and
Co., USA). Eur. Pat. Appl. EP 220923 A2 6 May 1987, 27 pp.
DESIGNATED STATES: R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI,
LU, NL, SE. (European Patent Organization) CODEN: EPXXDW.
CLASS: ICM: C07K005-06. ICS: C12P021-02; C07C101-32;
C12P013-04. ICA: A23L001-236; C12N011-00. APPLICATION: EP
86-308176 21 Oct 1986. PRIORITY: US 85-789595 21 Oct 1985; US
85-789593 21 Oct 1985. DOCUMENT TYPE: Patent CA Section: 17
(Food and Feed Chemistry) Section cross-reference(s): 16, 34
RNHCH(CH₂CO₂H)CONHCH(CO₂R₁)CR₂R₃Ph[R = H, protecting
group; R₁ = H, C₁-C₄ alkyl; all three chiral centers have the common
natural configuration of naturally occurring amino acids; R₂, R₃ = H,
reductively removable (un)substituted hetero atom group or CR₂R₃ =
heterocyclyl], useful as sweeteners, are prepd. by enzymic coupling of
DL-erythro-phenylserine or its deriv. with L-aspartic acid or its deriv.
using (immobilized) (non)metallo-proteinase, e.g., thermolysin, trypsin,
and may be converted to aspartame or its derivs. by hydrogenation.
Novel phenylserine esters are also obtained from PhCHO and a glycine
ester using serine hydroxymethyltransferase or alternatively from
PhCOCH₂CO₂Me via hydrogenation of PhC(NO₂)CH₂CO₂Me. Thus, a
mixt. of 4.2 mmol Z-Asp-OH (Z = CO₂CH₂Ph), 12.8 mmol
DL-erythro-PhCH(OH)CHNH₂CO₂Me and 6g thermolysin immobilized
on Amberlite XAD-7 in 30 mL satd. EtOAc, which was prepd. by
shaking EtOAc with 0.1 M aq. 2(N-morpholino ethanesulfonic acid at
pH 6, was shaken at 40° for 8h to give 1.2 g Z-Asp-Q (Q =
L-erythro-PhCH(OH)CH(CO₂Me)NH-) which was hydrogenated over
Pd(OH)2/C in AcOH contg. concd. HCl to give H-Asp-Q.

Keywords

hydroxyaspartame prepn sweetening agent
aspartame enzymic synthesis
serine hydroxymethyltransferase condensation benzaldehyde glycine
ester
proteinase peptide coupling phenylserine aspartic acid

Index Entries

Escherichia coli
serine hydroxymethyltransferase of, for coupling of benzaldehyde
with alkyl glycine ester
21124-13-0
Me esterification by, of semicarbazone of benzoylglycine
1314-15-4
7440-02-0, uses and miscellaneous
7440-05-3, uses and miscellaneous
7440-06-4, unspecified
7440-48-4, uses and miscellaneous
12135-22-7
catalyst, for hydrogenation of aspartylphenylalanine deriv.,
hydroxyaspartame from
93-58-3

condensation of, with Me acetate
79-20-9
condensation of, with Me benzoate
100-52-7, biological studies
condensation of, with alkyl glycine ester in presence of serine
hydroxymethyl transferase
56-40-6, alkyl ester
616-34-2
condensation of, with benzaldehyde
65-85-0, alkyl ester
coupling of, with alkyl acetate
64-19-7, alkyl ester
coupling of, with alkyl benzoate
540-63-6
dithioketalization by, of Me benzoylglycinate
38061-23-3
dithioketalization of, by ethanedithiol
9029-83-8
for coupling of benzaldehyde with alkyl glycine ester
9073-78-3
immobilized on Amberlite XAD-7, for peptide coupling of
phenylserine (deriv.) with aspartic acid (deriv.)
9001-12-1
9001-92-7
9002-07-7
9036-06-0
37288-82-7
81669-70-7
82904-05-0
immobilized, for peptide coupling of phenylserine (deriv.) with
aspartic acid (deriv.)
7632-00-0
oximation by, of Me benzoylacetate
63-91-2, alkyl ester (derivs.)
peptide coupling of, with aspartic acid deriv. in presence of
immobilized proteinase
56-84-8, N-substituted derivs.
peptide coupling of, with phenylalanine alkyl ester (derivs.) in
presence of immobilized proteinase
1152-61-0
13726-67-5
peptide coupling of, with erythro-phenylserine Me ester in presence
of immobilized thermolysin
110996-42-4
prepn. and Me esterification of, by methyltolyltriazene
17193-41-8
prepn. and conversion of, to free base
110996-40-2
prepn. and conversion of, to semicarbazone
64999-32-2
prepn. and conversion of, to b-chlorophenylalanine
110996-38-8
prepn. and hydrogenation of, erythro-and threo-b-phenylserine Me
ester from
111004-34-3
prepn. and hydrogenolysis of, aspartame from
110996-39-9
prepn. and hydrolysis of
614-20-0, alkyl ester
614-27-7
prepn. and oximation of
64792-93-4
prepn. and peptide coupling of, with N-protected aspartic acid in
presence of immobilized thermolysin
100129-55-3

110996-41-3
 110996-43-5
 prepn. of, as intermediate for aspartame
 56884-61-8
 prepn. of, as intermediate for hydroxyaspartame
 110996-37-7
 111004-33-2
 prepn. of, as sweetening agent
 563-41-7
 semicarbazone formation of, with Me benzoylglycine
 37380-43-1
 thermolysin immobilized on, for peptide coupling of phenylserine
 (deriv.) with aspartic acid (deriv.)

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107:222670

One-stage denitrification of wastewater by oxidation.
 Nakayama, Daiki (Japan). Jpn. Kokai Tokkyo Koho JP 62197196 A2
 31 Aug 1987 Showa, 5 pp. (Japan) CODEN: JKXXAF. CLASS: ICM:
 C02F003-34. APPLICATION: JP 86-38716 24 Feb 1986.
 DOCUMENT TYPE: Patent CA Section: 60 (Waste Treatment and
 Disposal)
 NH₄⁺-N in wastewater is removed in one-stage by oxidizing with
 dissolved O to nitrites in the presence of immobilized bacteria and then
 by decompn. the resulting nitrites to N and H₂O in the presence of a
 ferric compd. as catalyst. The immobilized bacteria consist of ³¹ of
 Nitrosomonas, Nitrospira, Nitrosococcus, and Nitrosolobus. The
 use of O is conserved and no nitrifying and denitrifying bacteria are
 needed. Thus, 10 L each of a wastewater contg. nitrified sludge from a
 nitrification tank was charged to two 10-L aeration tanks, left for 30 min,
 and the resulting supernatant was discharged. A 10 g of FeCl₃ powder
 was added to one of the aeration tanks and both samples in the
 aeration tanks were mixed with 9 L of a culturing medium. The mixt.
 was aerated at 3 L-air/min at 23°, and the resulting supernatant after 30
 min settling was discharged once a day. All the NH₄⁺-N (200 ppm) in
 the sample was removed by one-day aeration whereas none of the
 NH₄⁺-N was removed from the other sample without added FeCl₃
 powder after 7 days.

Keywords

ammonium removal wastewater oxidn decompn
 immobilization nitrite bacteria wastewater oxidn
 ferric compd catalyst nitrite decompn
 denitrification nitrification wastewater oxidn decompn

Index Entries

Decomposition catalysts
 ferric compds., for nitrites, in wastewater treatment
 nitrification-denitrification
 Bacteria
 Nitrosococcus
 Nitrosolobus
 Nitrosomonas
 Nitrospira
 immobilization of, for nitrification, in wastewater treatment
 Wastewater treatment
 aeration, immobilized bacteria for, for ammonium removal
 Wastewater treatment
 denitrification, nitrification and, by decompn. and oxidn., ferric
 compd. catalyst and immobilized bacteria for
 Wastewater treatment
 nitrification, denitrification and, by oxidn. and decompn.,

immobilized bacteria and ferric compd. catalyst for
 1309-37-1, uses and miscellaneous
 7705-08-0, uses and miscellaneous
 catalysts, for decompn. of nitrites, in wastewater
 nitrification-denitrification
 14798-03-9, uses and miscellaneous
 removal of, from wastewater, by oxidn. and decompn., ferric
 compd. catalyst and immobilized bacteria for

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107:185789

Electrocatalytic reduction of carbon dioxide to methanol. Part 7. With
 quinone derivatives immobilized on platinum and stainless steel.
 Ogura, Kotaro; Fujita, Minoru (Dep. Appl. Chem., Yamaguchi Univ.,
 Ube 755, Japan). J. Mol. Catal., 41(3), 303-11 (English) 1987.
 CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE: Journal
 CA Section: 72 (Electrochemistry) Section cross-reference(s): 22, 23,
 67

Catalytic redn. of CO₂ was performed at quinone deriv.-modified
 electrodes such as p-benzoquinone, 2-aminoanthraquinone, indigo and
 alizarin. These compds. worked as an electrode mediator in the
 catalytic redn. of CO₂, although they tended to shed from the substrate
 at a large neg. potential. The redox reaction of a favorable mediator
 must be reversible, and in this context the electrode modified with
 phthalocyanine cobalt did not operate as a mediator since the redox
 reaction of this compd. was completely irreversible. The redn. of CO₂
 to MeOH was induced via a homogeneous catalysis by oxidn. of the
 leuco-type of quinone, and regeneration of the active mediator was
 electrochem. achieved.

Keywords

carbon dioxide electroredn quinone electrode
 catalyst electroredn immobilized quinone deriv
 benzoquinone modified electrode catalytic redn
 aminoanthraquinone modified electrode catalytic redn
 indigo modified electrode catalytic redn
 alizarin modified electrode catalytic redn

Index Entries

Electric current
 efficiency of, in carbon dioxide redn. to methanol on platinum or
 stainless steel modified with quinone derivs.
 Reduction, electrochemical
 of carbon dioxide on quinone-modified platinum or stainless steel
 Quinones
 platinum or stainless steel electrodes modified with
 Electrodes
 platinum or stainless steel modified with quinone derivs.
 Reduction catalysts
 electrochem., quinone derivs., immobilized on platinum or
 stainless steel, for carbon dioxide
 7440-06-4, uses and miscellaneous
 12597-68-1, uses and miscellaneous
 electrodes, modified with immobilized quinone derivs. or Everitt's
 salt or cobalt phthalocyanine, for carbon dioxide catalytic
 redn.
 15362-86-4
 platinum or stainless steel electrodes coated with, for carbon
 dioxide catalytic redn.
 72-48-0
 106-51-4, uses and miscellaneous
 117-79-3

482-89-3

platinum or stainless steel electrodes modified with immobilized,
for carbon dioxide catalytic redn.

110-80-5

25086-15-1

platinum or stainless steel electrodes modified with quinone derivs.
in paste contg.

7782-42-5, uses and miscellaneous

platinum or stainless steel electrodes modified with quinone derivs.
in paste contg. powder of

3317-67-7

platinum or stainless steel electrodes modified with, for carbon
dioxide catalytic redn.

67-56-1, preparation

prepn. of, by elec. catalytic redn. of carbon dioxide on platinum or
stainless steel modified with immobilized quinoline derivs.

124-38-9, reactions

redn. of, elec. catalytic, on platinum or stainless steels modified
with immobilized quinone derivs.

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107:184426

Hydrazine oxidation by molecular oxygen catalyzed by cobalt complex
with immobilized hematoporphyrin.

Bratushko, Yu. I.; Yakubovich, T. N.; Yatsimirskii, K. B.; Kotlyar, S. S.
(Inst. Fiz. Khim., Kiev, USSR). Kinet. Katal., 28(2), 491-5 (Russian)

1987. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms)

Cobalt(III) hematoporphyrin complexes immobilized on aerosil catalyze
N₂H₄ oxidn. by O₂ in aq. soln. At pH 7 and 24.8°, the rate const. is
(25.7 ± 0.6) × 10⁻² min⁻¹. A mechanism involving Michaelis complex
formation with 2 substrates is proposed for solns. contg. 0.003-0.1 M
N₂H₄ and 2.3 × 10⁻⁴ M O₂.

Keywords

hydrazine oxidn aq immobilized catalyst
cobalt porphyrin catalyst hydrazine oxidn

Index Entries

Oxidation catalysts

cobalt(III) hematoporphyrin complex, immobilized on aerosil for
hydrazine in aq. soln.

Kinetics of oxidation

of hydrazine, in aq. soln. in presence of immobilized cobalt
hematoporphyrin complex

7440-48-4, hematoporphyrin complexes

14459-29-1, cobalt(III) complexes

catalysts, immobilized on aerosil, for oxidn. of aq. hydrazine

302-01-2, reactions

oxidn. of aq., in presence of immobilized cobalt hematoporphyrin
complex

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107:162577

Cobalt complex with immobilized porphyrin in hydrazine oxidation.

Tertykh, V. A.; Kotlyar, S. S.; Yanishpol'skii, V. V.; Yatsimirskii, K. B.;
Yakubovich, T. N.; Bratushko, Yu. I. (Inst. Phys. Chem., Kiev 252028,
USSR). React. Kinet. Catal. Lett., 33(2), 411-16 (English) 1987.

CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT TYPE: Journal

CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction

Mechanisms)

Porphyrin immobilized on SiO₂ and its complex with Co were prep'd. and identified. Oxidn. kinetics is described by the Michaelis-Menten equation.

Keywords

porphyrin immobilized silica catalyst oxidn hydrazine
cobalt porphyrin silica catalyst oxidn hydrazine

Index Entries

Kinetics of oxidation
of hydrazine, catalyzed by porphyrins immobilized on silica
Oxidation catalysts
porphyrins immobilized on silica, for hydrazine
14459-29-1
15612-49-4
catalysts, immobilized on silica, for oxidn. of hydrazine
302-01-2, reactions
oxidn. of, catalyzed by porphyrins immobilized on silica, kinetics of

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115:139261

Low molecular weight, polymeric, and covalently bound
cobalt(II)-phthalocyanines for the oxidation of mercaptans.
Woehrle, D.; Buck, T.; Schneider, G.; Schulz-Ekloff, G.; Fischer, H. (Inst. Org. Makromol. Chem., Univ. Bremen, Bremen 2800/33, Fed. Rep. Ger.). J. Inorg. Organomet. Polym., 1(1), 115-30 (English) 1991.
CODEN: JIOPE4. ISSN: 1053-0495. DOCUMENT TYPE: Journal CA
Section: 51 (Fossil Fuels, Derivatives, and Related Products) Section cross-reference(s): 23, 38, 67
Cobalt(II)-phthalocyanines in different environments are investigated as catalysts for the oxidn. of thiols. Water-sol. low mol.-wt. 2,9,16,23-tetracarboxyphthalocyanine (I) and polymeric phthalocyanine with carboxylic end groups (prep'd. as benzenetetracarboxylic acid dianhydride-urea copolymer) were also prep'd. I was covalently bound on linear and crosslinked (with divinylbenzene) poly(chloromethylstyrene) in the presence of pyridine to obtain water-sol. polymers and gel-type polymers. Covalent binding of I to surface-modified SiO₂ was also realized. Low mol.-wt. and polymeric phthalocyanines were also fixed on SiO₂, Al₂O₃, and charcoal. In addn., a low-mol.-wt Co phthalocyanine was encapsulated in the interior of NaX zeolite. All materials are efficient catalysts for the oxidn. of 2-mercaptoethanol. The mechanism employing water-sol. catalysts is discussed as a mononuclear complex coordinating O₂ and thiol. Heterogeneous catalysts contg. monomeric phthalocyanines on the supports show enhanced activity with increasing dispersion. The proposed mechanism considers different reaction sites for the coordination of O₂ and thiol.

Keywords

cobalt phthalocyanine mercaptan oxidn catalyst
silica functionalized cobalt phthalocyanine catalyst
alumina functionalized cobalt phthalocyanine catalyst
charcoal functionalized cobalt phthalocyanine catalyst
zeolite cobalt phthalocyanine mercaptan oxidn
polystyrene functionalized cobalt phthalocyanine catalyst

Index Entries

Oxidation catalysts
cobalt phthalocyanines, on functionalized supports and

polystyrenes, for mercaptans
 Charcoal
 reaction products with cobalt tetracarboxyphthalocyanines,
 catalysts, for mercaptan oxidn.
 Zeolites, uses and miscellaneous
 NaX, cobalt phthalocyanine-impregnated, catalysts, for mercaptan
 oxidn.
 Petroleum refining catalysts
 oxidn., cobalt phthalocyanines, on functionalized supports and
 polystyrenes, for mercaptans
 3317-67-7
 36344-62-4
 79631-29-1
 catalyst, immobilized on functionalized supports, for mercaptan
 oxidn.
 91-15-6
 712-74-3
 catalysts, contg. functionalized silica-supported cobalt
 phthalocyanines, for mercaptan oxidn.
 919-30-2, silica derivs., reaction products with cobalt
 tetracarboxyphthalocyanine
 1344-28-1, reaction products with cobalt tetracarboxyphthalocyanines
 7631-86-9, 3-aminopropyl derivs., reaction products with cobalt
 tetracarboxyphthalocyanine
 9003-70-7, chloromethylated, reaction products with cobalt
 tetracarboxyphthalocyanine
 29296-32-0, pyridinium derivs., reaction products with cobalt
 tetracarboxyphthalocyanine
 89655-47-0, cobalt complexes
 catalysts, for mercaptan oxidn.
 7440-48-4, phthalocyanine complexes
 catalysts, on functionalized supports and polystyrenes, for
 mercaptan oxidn.
 60-24-2
 75-08-1
 oxidn. of, supported cobalt phthalocyanine catalysts for
 1335-30-4
 zeolites, NaX, cobalt phthalocyanine-impregnated, catalysts, for
 mercaptan oxidn.

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115:94779

Immobilization of $\text{HRh}(\text{CO})(\text{P}(\text{m-C}_6\text{H}_4\text{SO}_3\text{Na})_3)_3$ on an anion exchange
 resin for the hydroformylation of higher olefins.
 Toth, Imre; Hanson, Brian E.; Guo, Ipin; Davis, Mark E. (Dep. Chem.,
 Virginia Polytech. Inst. and State Univ., Blacksburg, VA 24061, USA).
 Catal. Lett., 8(2-4), 209-14 (English) 1991. CODEN: CALEER. ISSN:
 1011-372X. DOCUMENT TYPE: Journal CA Section: 45 (Industrial
 Organic Chemicals, Leather, Fats, and Waxes) Section
 cross-reference(s): 23, 67
 The anion exchange resin Amberlyst, A-26, formed an efficient matrix
 for the immobilization of the water-sol. complex,
 $\text{HRh}(\text{CO})(\text{m-C}_6\text{H}_4\text{SO}_3\text{Na})_3)_3$. Catalysis proceeded in anhyd. alc.
 solvents which allows the conversion of water-insol. olefins to
 aldehydes. Activities and selectivities were similar to both supported
 aq.-phase catalysts and to the neutral complex, $\text{HRh}(\text{CO})(\text{PPh}_3)_3$ in
 nonaq. solvents. The catalyst prepn. minimized the quantity of water in
 the supported catalyst; the lack of water responsible for an increase in
 catalyst stability toward oxidn.

Keywords

hydroformylation catalyst Amberlyst immobilized
 alkene hydroformylation heterogeneous catalyst

oxidn stability heterogeneous hydroformylation catalyst

Index Entries

Hydroformylation catalysts

Amberyst A-26-immobilized tris(trisulfonated triphenylphosphine)rhodium carbonyl hydride, for conversion of water-insol. olefins to aldehydes in nonaq. solns.

109427-00-1

catalysts, polymer-bound, for hydroformylation of water-insol. olefins to aldehydes in nonaq. soln., catalyst oxidn. stability in relation to

111-66-0

112-41-4

1120-36-1

hydroformylation of, catalysts for

630-08-0, reactions

hydroformylation with, of alkenes, catalysts for

10486-19-8

37596-36-4

prepn. of, by dodecene hydroformylation, catalysts for

124-19-6

7786-29-0

prepn. of, by octene hydroformylation, catalysts for

2765-11-9

55019-35-7

prepn. of, by tetradecene hydroformylation, catalysts for

39339-85-0

rhodium catalysts bound on, for hydroformylation of water-insol. olefins to aldehydes in nonaq. soln., catalyst oxidn. stability in relation to

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114:99946

Design of two immobilized cell catalysts by entrapment on gelatin: internal diffusion aspects.

Castillo, E.; Rodriguez, M.; Casas, L.; Quintero, R.; Lopez-Munguia, A. (Cent. Invest. Ing. Genet. Biotecnol., UNAM, Cuernavaca 62271, Mex.).

Enzyme Microb. Technol., 13(2), 127-33 (English) 1991. CODEN:

EMTED2. ISSN: 0141-0229. DOCUMENT TYPE: Journal CA

Section: 16 (Fermentation and Bioindustrial Chemistry)

Exptl. results obtained during the design of 2 immobilized cell catalysts by entrapment of gelatin are given. Strong diffusional limitations were found and are explained by the usual parameters and models, introducing an empirical correlation between substrate concn. and effectiveness factor. The effects of particle size, enzyme load, and sp. activity in the system are discussed in terms of cooperation between bioengineers and geneticists.

Keywords

diffusion microorganism catalyst immobilization gelatin

Index Entries

Diffusion

catalysis by gelatin-entrapped bacteria response to

Gelatins, biological studies

cell catalysts immobilized on, diffusion effect on

Escherichia coli

penicillin acylase activity of immobilized, diffusion effect on

Kluyveromyces fragilis

b-galactosidase activity of immobilized, diffusion effect on

9031-11-2

immobilized Kluyveromyces fragilis contg., diffusion effect on catalytic activity of

9014-06-6

immobilized Escherichia coli contg., diffusion effect on catalytic activity of

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114:62828

Studies on immobilized polymer-bound imidazole copper(II) complexes as catalysts. Part II. Immobilization of copper(II) complexes of poly(styrene-co-N-vinylimidazole) by quaternization or adsorption on silica and their catalyses of oxidative coupling of 2,6-disubstituted phenols.

Chen, Wei; Challa, G. (Lab. Polym. Chem., Univ. Groningen, Groningen 9747 AG, Neth.). React. Polym., 14(1), 63-73 (English) 1991.

CODEN: REPLEN. ISSN: 0923-1137. DOCUMENT TYPE: Journal

CA Section: 35 (Chemistry of Synthetic High Polymers)

Cu(II) complexes of styrene-N-vinylimidazole copolymers (I) were immobilized on modified silica by quaternization or on unmodified silica by adsorption, and these immobilized polymer-bound complexes were applied as catalysts for oxidative coupling polymn. of 2,6-dimethylphenol (II) in PhMe/MeOH. Higher av. chain loading (a) of I with imidazole groups, e.g. a ³ 17%, was essential for successful absorption. A main role of hydroxide was prodn. of more reactive phenolate anions from II. A rise in reaction rate was not obsd. for high ligand/Cu, which probably resulted from too high viscosity of the silica suspension at high ligand/Cu. In a batch process under comparable conditions both types of immobilized polymer catalysts had the same preference for poly(2,6-dimethyl-1,4-phenylene oxide) formation as nonimmobilized Cu(II)-I. However, they were 5 times less active than nonimmobilized ones, which was explained primarily in terms of a reduced effective ligand/Cu ratio after the immobilization of polymeric ligands. Application of both types of immobilized polymer catalysts in a continuous stirred tank reactor for oxidative coupling of 2,6-di-tert-butylphenol was successful.

Keywords

styrene vinylimidazole copolymer copper complex
silica immobilization copolymer copper complex
polymn catalyst copolymer copper complex
methylphenol polymn catalyst

Index Entries

Kinetics of polymerization

of dimethylphenol, in presence of silica-immobilized styrene-vinyl imidazole copolymer copper complex catalysts

Adsorption

of styrene-vinylimidazole copolymer on silica, catalytic activity of copper complexes in polymn. of dimethylphenol in relation to

Polymerization catalysts

silica-immobilized styrene-vinylimidazole copolymer copper complexes, for dimethylphenol, kinetics in relation to

7631-86-9, reaction products with styrene-vinylimidazole copolymer, copper complexes

15267-95-5, reaction products with silica and styrene-vinylimidazole copolymer, copper complexes

60755-40-0, silica deriv.-quaternized, copper complexes

catalyst, for polymn. of dimethylphenol, kinetics in relation to

7440-50-8, complexes with silica-immobilized styrene-vinylimidazole copolymers

catalysts, for polymn. and dimethylphenol, kinetics in relation to
128-39-2
576-26-1, reaction products with silica and styrene-vinylimidazole
copolymer, copper complexes
polymn. of, kinetics of, in presence of silica-immobilized
styrene-vinylimidazole copolymer copper complex catalysts
7631-86-9, uses and miscellaneous
styrene-vinylimidazole copolymer copper complexes adsorbed on,
catalysts, for polymn. of dimethylphenol

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113:172468

Oxidation of monosaccharides in the presence of porphyrin complexes
of manganese(II) and molybdenum(VI) immobilized in a
polyacrylamide gel volume.

Potapov, G. P.; Krupenskii, V. I.; Alieva, M. I. (Syktyvkarsk. Gos. Univ.,
Syktyvku, USSR). Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol.,
33(3), 103-5 (Russian) 1990. CODEN: IVUKAR. ISSN: 0579-2991.

DOCUMENT TYPE: Journal CA Section: 33 (Carbohydrates)

Kinetics of oxidn. of aldoses, e.g. D-(+)-xylose and D-(+)-glucose by O₂
by Mg and Mo complexes with porphyrins immobilized on
polyacrylamide contg. gels at 30-80° were detd. In both cases
destruction of the aldose occurred to give HCO₂H, CH₂O, and xylonic
and gluconic acids, resp.

Keywords

oxidn aldose metal porphyrin immobilized catalyst
kinetics oxidn aldose

Index Entries

Porphyrins

complexes contg. magnesium and molybdenum, as catalysts for
oxidn. of aldoses

Oxidation catalysts

magnesium and molybdenum porphyrin complexes, for xylose and
glucose, kinetics in relation to

Kinetics of oxidation

of xylose and glucose by oxygen in presence of magnesium and
molybdenum porphyrin complexes immobilized on
polyacrylamide gels

Oxidation

of xylose and glucose by oxygen in presence of magnesium and
molybdenum porphyrin complexes, immobilized on
polyacrylamide gels

Monosaccharides

oxidn. of, by oxygen on magnesium and molybdenum porphyrin
complexes immobilized on polyacrylamide gels, kinetics
of

64-18-6, preparation

526-95-4

17828-56-7

formation of, in oxidn. of xylose on magnesium and
molybdenum-porphyrin complexes

50-99-7, reactions

58-86-6, reactions

oxidn. of, by oxygen on magnesium and molybdenum porphyrin
complexes immobilized on polyacrylamide gels, kinetics
of

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113:139569

Synthesis of cobalt(III), manganese(III), ruthenium(IV) immobilized hydroxides and its catalytic properties in the reaction of water oxidation.

Elizarova, G. L.; Matvienko, L. G.; Lozhkina, N. V.; Parmon, V. N.; Moroz, E. M. (Inst. Katal., Novosibirsk, USSR). *Izv. Sib. Otd. Akad. Nauk SSSR, Ser. Khim. Nauk*, (3), 86-93 (Russian) 1990. CODEN: IZSKAB. ISSN: 0002-3426. DOCUMENT TYPE: Journal CA Section:

67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 78

A method for obtaining immobilized Co, Mn, and Ru hydroxides is proposed. It consists of hydrolysis of $\text{Co}(\text{NH}_3)_2(\text{H}_2\text{O})_4^{3+}$, $\text{Mn}(\text{bpy})(\text{H}_2\text{O})\text{Cl}_3$, or $\text{Ru}(\text{OH})\text{Cl}_3$ complexes in the presence of conventional supports (TiO_2 , Al_2O_3 , zeolites). The catalysts were tested in the oxidn. of H_2O by $\text{Ru}(\text{bpy})_3^{3+}$ at pH 6 in various buffers. The nature and surface area of the supports of many of the prepd. samples have similar chem. and catalytic properties. Highly dispersed hydroxide species are probably formed on support surfaces. These species undergo fragmentation under the action of buffer anions of the reaction mixt.

Keywords

hydroxide cobalt manganese ruthenium supported catalyst
cobalt hydroxide supported catalyzed prepn
manganese hydroxide supported catalyst prepn
ruthenium hydroxide supported catalyst prepn
water oxidn metal hydroxide supported catalyst

Index Entries

Hydrolysis

of transition metal complexes, in presence of oxide supports, in catalyst prepn.

Kinetics of oxidation

of water by ruthenium(III) bipyridine complex, catalyzed by supported metal hydroxides

Oxidation catalysts

transition metal hydroxides supported on various oxides, for water, prepn. and activity of

Zeolites, uses and miscellaneous

NaA, catalysts from transition metal hydroxides and, for oxidn. of water, prepn. and activity of

Zeolites, uses and miscellaneous

NaX, catalysts from transition metal hydroxides and, for oxidn. of water, prepn. and activity of

12672-51-4

catalysts from oxide supports and, for oxidn. of water, prepn. of, by hydrolysis of cobalt aqua ammine complex

12626-88-9

catalysts from oxide supports and, for oxidn. of water, prepn. of, by hydrolysis of manganese aqua bipyridine chloro complex

56321-86-9

catalysts from oxide supports and, for oxidn. of water, prepn. of, by hydrolysis of ruthenium chloro hydroxo complex

13463-67-7, uses and miscellaneous

18282-10-5

catalysts from transition metal hydroxides and, for oxidn. of water, prepn. and activity of

15632-12-9

16845-29-7

30931-71-6

hydrolysis of, in presence of oxide supports, in catalyst prepn.

18955-01-6

oxidn. by, of water, catalyzed by supported metal hydroxides, kinetics of

7732-18-5, reactions
 oxidn. of, by ruthenium(III) bipyridine complex, catalyzed by
 supported metal hydroxides, kinetics of
 1335-30-4
 zeolites, NaA, catalysts from transition metal hydroxides and, for
 oxidn. of water, prepn. and activity of
 1335-30-4
 zeolites, NaX, catalysts from transition metal hydroxides and, for
 oxidn. of water, prepn. and activity of

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113:11477

Ultrafine gold particles immobilized on alkaline earth compounds as
 catalysts and sensors for combustible gases.
 Haruta, Masatake; Tsubota, Susumu; Kobayashi, Tetsuhiko; Nakahara,
 Yoshiko (Agency of Industrial Sciences and Technology, Japan). Ger.
 Offen. DE 3832268 A1 6 Apr 1989, 19 pp. (Germany) CODEN:
 GWXXBX. CLASS: ICM: B01J023-66. ICS: B01J027-232;
 G01N027-30. ICA: B01J023-02; C10K001-34; C10K003-04;
 B01D053-36; H01C007-04. APPLICATION: DE 88-3832268 22 Sep
 1988. PRIORITY: JP 87-240515 24 Sep 1987. DOCUMENT TYPE:
 Patent CA Section: 59 (Air Pollution and Industrial Hygiene) Section
 cross-reference(s): 51, 67
 The oxidn. or redn. catalysts or combustible gas sensor can be manufd.
 by various methods, esp. comprising: (1) dropwise addn. of an aq.
 soln. of a Au compd. to an aq. soln. contg. an alk. earth compd. in which
 pptn. of Au(OH)₃ is induced on the alk. earth compd., followed by
 particle recovery and calcination; (2) addn. of a reducing agent to an
 aq. soln. contg. a dissolved Au compd. and an alk. earth compd.,
 followed by recovery of the coppt. and its calcination; (3) addn. of CO₂
 gas or an aq. acidic soln. to an aq. soln. causing pptn. of Au(OH)₃ on
 the alk. earth compd., followed by particle recovery and calcination; or
 (4) copptn. of a Au compd. and an alk. earth compd. by neutralization of
 an aq. soln. contg. these compds., followed by ppt. recovery and
 calcination. The alk. earth compd. is an oxide, hydroxide, carbonate,
 basic carbonate, nitrate, sulfate, or chloride of Be, Mg, Ca, Sr, or Ba,
 as well as mixed oxides of Ti, Fe, Co, or Ni.

Keywords

catalyst gold alk earth metal
 oxidn redn catalyst gold manuf
 combustible gas sensor gold manuf

Index Entries

Oxidation catalysts
 Reduction catalysts
 gold on alk. earth compds., manuf. of
 Combustibles
 gaseous, sensors for, from gold immobilized or alk. earth
 compds., manuf. of
 506-65-0
 13682-61-6
 13967-50-5
 15189-51-2
 16903-35-8
 127622-29-1
 catalysts or combustible gas sensors prepd. with, and alk. earth
 compds.
 1303-52-2
 7440-57-5, uses and miscellaneous
 catalysts, on alk. earth compd., for combustible gas sensors
 1304-56-9, unspecified

1305-62-0, preparation
 1309-48-4, preparation
 1314-11-0, preparation
 7439-89-6, oxides with alk. earth metals
 7439-95-4, compds.
 7440-02-0, oxides with alk. earth metals
 7440-24-6, compds.
 7440-32-6, oxides with alk. earth metals
 7440-39-3, compds.
 7440-41-7, compds.
 7440-48-4, oxides with alk. earth metals
 7440-70-2, compds.
 10377-60-3
 12047-27-7, preparation
 12060-59-2
 12115-66-1
 13327-32-7
 13597-99-4
 18480-07-4
 gold immobilized on, catalysts or combustible gas sensors from,
 manuf. of
 630-08-0, reactions
 1333-74-0, reactions
 oxidn. of, catalysts for, gold immobilization on alk. earth compds.
 as, manuf. of
 64-19-7, uses and miscellaneous
 124-38-9, uses and miscellaneous
 7647-01-0, uses and miscellaneous
 7664-93-9, uses and miscellaneous
 7697-37-2, uses and miscellaneous
 pptn. inducing agent, for gold immobilization on alk. earth compds.,
 in catalysts and combustible gas sensors manuf.
 10102-43-9, reactions
 11104-93-1, reactions
 redn. of, catalyst for, gold immobilized on alk. earth compds. as,
 manuf. of
 68-04-2
 144-23-0
 302-01-2, preparation
 3012-65-5
 50-00-0, preparation
 reducing agent, gold pptn. with, in manuf. of catalysts and sensors
 for combustible gases

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112:216180

Immobilization of 2,4-ionene on a macroporous
 poly(styrene-divinylbenzene) resin and its effect on the rate of the
 cobalt phthalocyanine-catalyzed oxidative coupling of
 mercaptoethanol.

Van Streun, Karel H.; Meuldijk, Jan; German, Anton L. (Lab. Polym.
 Chem., Eindhoven Univ. Technol., Eindhoven 5600 MB, Neth.). Angew.
 Makromol. Chem., 173, 119-35 (English) 1989. CODEN: ANMCBO.

ISSN: 0003-3146. DOCUMENT TYPE: Journal CA Section: 23

(Aliphatic Compounds) Section cross-reference(s): 22, 67

A poly(quaternary ammonium) salt, 2,4-ionene, has been immobilized
 on a macroporous chloromethylated poly(styrene-divinylbenzene) resin
 (XAD-2). The ionene content of the resin, detd. by CHN elemental
 anal., was 50.2 g/kg resin. The most important side effect of the
 modified resin, catalyst (2,4-ionene) bleeding, can be detected by a
 spectrophotometric method capable of detg. extremely low concns. of
 free ionene in the supernatant of the resin. The activity of these
 immobilized 2,4-ionene/cobalt(II)phthalocyanine-tetrasodium sulfonate
 complexes towards the oxidative coupling of thiols is much lower than

in the homogeneous case, but still considerably higher than for the polymer free system. The obsd. decrease in reaction rate does not originate from the considerable mass transfer resistances, but predominantly from catalyst properties, like a very low local N+/Co ratio. The active sites appear to be present in the outer shell of the resin particles only.

Keywords

ionene cobalt polymer supported catalyst
oxidative coupling thiol
disulfide

Index Entries

Polymer-supported reagents
ionene and cobalt phthalocyanine on macroporous
poly(styrene-divinylbenzene) resin
Thiols, reactions
oxidative coupling of, immobilized catalyst for
Disulfides
prepn. of, by cobalt phthalocyanine-catalyzed oxidative coupling of
thiols
Coupling reaction catalysts
oxidative, polymer-supported ionene and cobalt phthalocyanine, for
thiols
9003-70-7, chloromethylated
9060-05-3
catalyst support, for ionene and cobalt phthalocyanine in oxidative
coupling of mercaptoethanol
27459-40-1
catalyst with ionene supported on a macroporous
poly(styrene-divinylbenzene) resin, for oxidative coupling of
mercaptoethanol
60-24-2
oxidative coupling of, immobilized catalyst for
32077-11-5
polymer-supported, catalysts with cobalt phthalocyanine, for
oxidative coupling of mercaptoethanol

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112:99808

Modification of an AN-31 anion exchanger with crown ether.
Ergozhin, E. E.; Kurmanaliev, M.; Idrisova, K. S. (Kaz. Gos. Univ.,
Alma-Ata, USSR). Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol.,
32(6), 110-11 (Russian) 1989. CODEN: IVUKAR. ISSN: 0579-2991.
DOCUMENT TYPE: Journal CA Section: 37 (Plastics Manufacture and
Processing) Section cross-reference(s): 22
A new crown-contg. interphase-transfer catalyst
4'-chlorosulfonylbenzo-15-crown-5 (I) for modified carbon of AN-31
anion exchanger (AE) was prepd. by the reaction of benzo-15-crown-5
with chlorosulfonic acid. The AN-31 was modified with I in CHCl₃ at 50°
for 24 h. I was immobilized on AN-31 contg. secondary amino groups.
The IR-spectroscopic detn. proved that concn. compds. are bonded
with AN-31 as a result of the interaction of secondary amino groups of
the AE and chlorosulfonic group of benzocrown. The obtained crown
ethers on polymeric supports were used as interphase transfer
catalysts in nucleophilic substitution reactions.

Keywords

anion exchanger modification crown ether
catalyst interphase transfer crown ether
nucleophilic substitution reaction crown catalyst

Index Entries

Substitution reaction catalysts
 nucleophilic, phase-transfer, crown ethers, immobilized on anion
 exchangers
 85576-25-6
 immobilization of, on anion exchangers, interface-transfer catalyst
 prepn. by
 12640-33-4
 modification of, with chlorosulfonylbenzocrown ether, for
 interface-transfer catalyst prepn.
 29296-32-0
 nucleophilic substitution reaction of, anion exchanger-immobilized
 benzocrown ether catalyst for

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112:56642
 Substrate specificity of polyethylene glycol-modified papain catalyzed
 peptide bond synthesis in benzene.
 Lee, Ho Hi; Fukushi, Hideaki; Uchino, Masazumi; Sato, Kaoru;
 Takahashi, Katsunobu; Inada, Yuji; Aso, Keiichi (Tech. Div., Chisso
 Co., Yokohama 236, Japan). Chem. Express, 4(4), 253-6 (English)
 1989. CODEN: CHEXEU. DOCUMENT TYPE: Journal CA Section:
 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s):
 9
 Polyethylene glycol-modified papain in benzene retained the S2 subsite
 specificity of the native papain in water. Oligomers up to tetramer were
 formed in the reaction of Bz-L-Ala-OMe with H-L-Phe-OMe, while the
 dimer was the sole product in the reaction using Bz-Gly-OEt as the
 carboxyl component.

Keywords

polyethylene glycol supported papain peptide coupling
 benzoylalanine coupling amino ester papain catalyst
 benzoylglycine coupling amino ester papain catalyst

Index Entries

Peptides, preparation
 prepn. of, by coupling benzoyl amino acid esters with amino acid
 esters in the presence of polyethylene glycol-modified
 papain
 Amino acids, esters
 N-benzoyl, esters, peptide coupling of, with amino acid esters in
 the presence of polyethylene glycol-modified papain
 1499-53-2
 7244-67-9
 peptide coupling of, with amino acid esters, poly(ethylene
 glycol)-immobilized papain as catalyst for
 616-34-2
 2577-90-4
 2666-93-5
 10065-72-2
 21685-51-8
 21705-13-5
 23032-21-5
 peptide coupling of, with benzoyl amino acid esters, poly(ethylene
 glycol)-immobilized papain as catalyst for
 9001-73-4
 polyethylene glycol-immobilized, as catalysts for coupling of
 benzoylamino acid esters with amino acid esters
 14281-55-1

33901-50-7
 51514-00-2
 53842-49-2
 56047-49-5
 63203-22-5
 79113-32-9
 79113-53-4.
 79113-54-5
 79113-55-6
 79113-64-7
 117289-86-8
 124903-39-5
 124903-40-8
 124903-41-9
 124903-42-0
 124903-43-1
 124903-44-2
 124903-45-3
 124903-46-4
 124903-47-5
 124903-48-6
 124903-49-7

prepn. and HPLC retention time of

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111:202773

Catalase activity of complex copper(II) compounds with polymeric Schiff's bases.

Men'shikov, S. Yu.; Kolenko, I. P.; Kharchuk, V. G.; Postovalov, V. G.; Petrov, L. A. (Inst. Khim., Sverdlovsk, USSR). Kinet. Katal., 30(3), 742-5 (Russian) 1989. CODEN: KNKTA4. ISSN: 0453-8811.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Polystyrene-divinylbenzene-immobilized Cu(II) Schiff base complex catalysts exhibit H₂O₂ decompn. activity. Kinetic data were obtained at 30-50°. A radical chain mechanism is proposed.

Keywords

hydrogen peroxide dissocn catalyst kinetics
 catalase activity polymer immobilized copper
 Schiff base copper polymer immobilized

Index Entries

Kinetics of decomposition
 of hydrogen peroxide, in presence of polymer-immobilized copper(II) Schiff base complexes
 Decomposition catalysts
 polymer-immobilized copper(II) Schiff base complexes, for hydrogen peroxide
 Schiff bases
 polymer-immobilized, copper complexes, catalysts, for decompn. of hydrogen peroxide
 90-02-8, Schiff base adducts with amino methylated polymer, copper(II) complexes
 98-01-1, Schiff base adducts with amino methylated polymer, copper(II) complexes
 1121-60-4, Schiff base adducts with amino methylated polymer, copper(II) complexes
 7440-50-8, complexes with polymer-immobilized Schiff bases
 9003-70-7, amino methylated, Schiff base adducts, copper(II) complexes
 catalysts, for decompn. of hydrogen peroxide

7722-84-1, reactions
decompn. of, in presence of polymer-immobilized copper(II) Schiff
base complexes

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111:64869

Catalysis of hydrosilylation by heterogenized metal complexes.
Reikhsfel'd, V. O.; Skvortsov, N. K. (USSR). Zh. Prikl. Khim.
(Leningrad), 62(4), 943 (Russian) 1989. CODEN: ZPKHAB. ISSN:
0044-4618. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
Reaction Kinetics, and Inorganic Reaction Mechanisms)
The method of synthesis and the specific catalytic activity of Pt, Rh, or
Ni complexes grafted onto org. or inorg. polymer supports for
hydrosilylation are discussed. Polymer-supported catalysts permit
qual. improvements to be made in hydrosilylation processes and allow
effective control of these processes.

Keywords

hydrosilylation catalyst polymer support
platinum polymer supported hydrosilylation catalyst
nickel polymer supported hydrosilylation catalyst
rhodium polymer supported hydrosilylation catalyst

Index Entries

Transition metals, uses and miscellaneous
catalysts, for hydrosilylation, polymer-immobilized
Hydrosilylation catalysts
transition metal complexes, polymer-immobilized
7440-02-0, uses and miscellaneous
7440-06-4, uses and miscellaneous
7440-16-6, uses and miscellaneous
catalysts, for hydrosilylation, polymer-immobilized

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111:22103

Design of a bioreactor using immobilized biocatalysts for the slurry
reaction. Production of L-malic acid.
Tosa, Tetsuya; Furui, Masakatsu; Sakata, Nobuyuki; Otsuki, Osamu;
Chibata, Ichiro (Res. Lab. Appl. Biochem., Tanabe Seiyaku Co., Ltd.,
Osaka, Japan). Ann. N. Y. Acad. Sci., 542(Enzyme Eng. 9), 440-3
(English) 1988. CODEN: ANYAA9. ISSN: 0077-8923. DOCUMENT
TYPE: Journal CA Section: 16 (Fermentation and Bioindustrial
Chemistry)
A bioreactor with an accompanying a crystallizer was used to avoid
destruction of immobilized biocatalyst by crystn. of the product. In this
particular reactor, a substrate was added into a crystallizer-separator,
which was controlled at a lower temp. in a slurry state. The satd.
substrate solns. was fed intermittently into an enzyme reactor contg.
immobilized biocatalysts by means of a pump. The effluent from the
bioreactor was reserved in a cushion tank and then was returned into
the crystallizer-separator to avoid a short pass in the crystallizer. In the
crystallizer, a supersatd. product crystd. out from the soln. and some of
the remaining solid substrates were dissolved in the soln. By using this
type of procedure, the substrate in the slurry state was completely
converted into a product in the slurry state. The bioreactor was
successfully applied for prodn. of L-malate from Ca fumarate by
immobilized Brevibacterium flavum cells.

Keywords

malate manuf fumarate immobilized Brevibacterium bioreactor

Index Entries

Brevibacterium flavum
malic acid manuf. with, in immobilized bioreactor
Reactors
biocatalytic, with crystallizer, for protection of immobilized
catalyst
110-17-8, biological studies
malic acid manuf. from, by Brevibacterium flavum in immobilized
bioreactor
97-67-6
manuf. of, by Brevibacterium flavum in immobilized bioreactor

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110:231053

Liquid-phase oligomerization of unsaturated hydrocarbons on nickel
gel-immobilized metal-complex catalytic systems.
Kabanov, V. A.; Smetanyuk, V. I.; Prudnikov, A. I.; Ivanyuk, A. V.;
Shepelin, V. A.; Volodin, V. V.; Grishin, G. A.; Ul'yanova, M. V.;
Rozenberg, L. M. (USSR). Oligomerizatsiya Nepredel. Uglevodorodov,
M., 86-115 From: Ref. Zh., Khim. 1988, Abstr. No. 7N205(Russian)
1987. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic
Compounds) Section cross-reference(s): 67
Title only translated.

Keywords

alkene dimerization gel immobilized catalyst
nickel gel metal complex catalyst

Index Entries

Dimerization catalysts
nickel gel-immobilized metal complexes, for unsatd. hydrocarbons
Dimerization
of unsatd. hydrocarbons in presence of nickel gel-immobilized
metal complexes
Hydrocarbons, reactions
unsatd., dimerization of, in presence of nickel gel-immobilized
metal complexes in liq. phase

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110:115357

Distinctive features of olefin polymerization on the surface of supports.
Dyachkovskii, F. S. (Inst. Chem. Phys., Moscow, USSR). Transition
Met. Organomet. Catal. Olefin Polym., [Proc. Int. Symp.], Meeting Date
1987, 67-78. Edited by: Kaminsky, Walter; Sinn, Hansjoerg. Springer:
Berlin, Fed. Rep. Ger. (English) 1988. CODEN: 56LAAQ.
DOCUMENT TYPE: Conference; General Review CA Section: 35
(Chemistry of Synthetic High Polymers)
The title review with 30 refs. discusses the synthesis and properties of
catalytic systems immobilized on polymers, olefin polymn. in the
presence of immobilized catalytic systems, and prodn. of filled
polymers.

Keywords

review immobilization catalyst alkene polymn
surface supported catalyst polymn review

Index Entries

Polymerization catalysts
 immobilized, on polymer supports, for alkenes
 Plastics, reinforced
 prepn. of, immobilized catalyst systems for
 Polymers, uses and miscellaneous
 supports, for immobilized catalysts, for polymn. of alkenes
 Alkenes, polymers
 polymers, prepn. of, immobilized catalysts for, polymer supports
 for

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109:93695

EPR study of the formation of an active component in gel-immobilized catalytic systems containing titanium butoxide.
 Potapov, G. P.; Poluboyarov, V. A.; Punegov, V. V.; Anufrienko, V. F.; Dzhemilev, U. M.; Kharlamov, V. G. (Syktyvkar. Gos. Univ., Syktyvkar, USSR). Kinet. Katal., 29(3), 679-82 (Russian) 1988. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)
 In catalyst systems of Et_2AlCl with $(\text{BuO})_4\text{Ti}$ immobilized on a polymer support contg. aryl phosphite donor groups, polymer supports with stronger donor groups gave a higher portion of isolated Ti(III) ions. The strong donors sufficiently stabilized the catalytically active Ti(III) form and led to high product selectivity in the oligomerization of butadiene.

Keywords

titanium butoxide catalyst polymer supported
 Ziegler catalyst polymer supported
 aluminum titanium catalyst polymer supported
 butadiene oligomerization polymer supported catalyst

Index Entries

Polymer-supported reagents
 titanium tetrabutoxide, catalysts, contg. diethylaluminum chloride, for oligomerization of butadiene, activation and selectivity of
 Polymerization catalysts
 Ziegler-Natta, diethylaluminum chloride-titanium tetrabutoxide, polymer-supported, for butadiene, active component formation in and selectivity of
 96-10-6, uses and miscellaneous
 catalysts, contg. polymer-supported titanium butoxide, for oligomerization of butadiene, activity and selectivity of
 5593-70-4
 catalysts, polymer-supported, for oligomerization of butadiene, activation and selectivity of
 4904-61-4
 formation of, in oligomerization of butadiene in presence of polymer-supported titanium tetrabutoxide catalyst, selectivity in
 106-99-0, reactions
 oligomerization of, in presence of polymer-supported titanium tetrabutoxide catalysts, catalyst activation and selectivity in

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108:10921

Biological denitrification of waters by immobilized systems.
 Maixner, Jiri; Cizinska, Simona; Havlin, Vladimir; Jindra, Jan (Mikrobiol. Ustav, CSAV, Prague, Czech.). Vodni Hospod.: B, 37(7), 179-82 (Czech) 1987. CODEN: VHOB AF. ISSN: 0322-8231.
 DOCUMENT TYPE: Journal CA Section: 61 (Water)

Denitrification of natural waters contaminated by fertilizers was studied using immobilized biocatalysts prep'd. from active sludge cells bonded by an ethyleneimine-glutaraldehyde copolymer. The immobilized catalysts beds were successfully used in stirred bath reactors and also in continuous flow reactors. The incoming water was presat'd. with air (91.0% satn. with O), the biocatalyst concn. was kept at 50 g/L, and the temp. was 21.5°. In batch expts. the biocatalyst could still reduce 95% of the incoming NO₃⁻ after 35 work cycles. In continuous denitrification of groundwater, the NO₃⁻ concn. was reduced from 44-92 to 0.05-1.00 mg/L level.

Keywords

denitrification water biocatalyst activated sludge
immobilized sludge polymer denitrification catalyst

Index Entries

Denitrification catalysts
polymer-immobilized activated sludge, for water purifn.
Water purification
denitrification, immobilized sludge as biocatalyst for
Wastewater treatment sludge
secondary, polymer-immobilized, as denitrification catalysts in
water purifn.
75133-03-8
active sludge immobilized with, as denitrification biocatalyst

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107:184434

Fine structure and low temperature carbon monoxide oxidation activity of ultrafine gold particles immobilized with hematite.
Haruta, Masatake; Delannay, Francis; Iijima, Sumio; Kobayashi, Tetsuhiko (Gov. Ind. Res. Inst., Ikeda 563, Japan). Shokubai, 29(2), 162-5 (Japanese) 1987. CODEN: SHKUJ. ISSN: 0559-8958.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section
cross-reference(s): 66
Copptd. hydrates of Au and Fe were calcined at 80-400°, subjected to XPS measurements, and used for CO oxidn. at -70°. At calcination temps. of 300-400°, the binding energies of Au are close to those of Au powder. Ultrafine Au particles of ~40 Å diam. are immobilized on the surface of Fe₂O₃ and do not coagulate during the transformations of α-Fe₂O₃ during calcination. The oxidn. is accelerated by the addn. of H₂O vapor into the reaction gas. The ultrafine Au particles either donate some electrons to α-Fe₂O₃ support or form intermetallic compds. with Fe. The resulting electron deficiency of the Au particles facilitates the absorption of CO. The oxidn. occurs between absorbed CO on Au surface and O species, including OH, on the surface of α-Fe₂O₃.

Keywords

carbon monoxide oxidn gold iron oxide
catalyst gold iron oxide surface structure
calcination gold iron oxide surface structure

Index Entries

Oxidation catalysts
gold-iron oxide, for carbon monoxide, prepn. and characterization
of
Oxidation
of carbon monoxide, on gold-iron oxide catalyst

Particles
of gold, supported on iron oxide, effect on calcination on
Surface structure
of gold-iron oxide catalysts, effect of calcination temp. on
Calcination
of gold-iron oxide catalysts, surface structure in relation to temp. of
1309-37-1, uses and miscellaneous
catalyst from gold and, for oxidn. of carbon monoxide, prepn. and
characterization of
7440-57-5, uses and miscellaneous
catalyst from iron oxide and, for oxidn. of carbon monoxide, prepn.
and characterization of
7732-18-5, vapor
oxidn. of carbon monoxide on gold-iron oxide catalyst in presence
of
630-08-0, reactions
oxidn. of, on gold-iron oxide catalyst

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107:171486

Effects of pressure on the sucrose inversion over an immobilized
invertase catalyst.

Sato, Masanori; Ozawa, Sentaro; Ogino, Yoshisada (Fac. Eng.,
Tohoku Univ., Sendai 980, Japan). J. Phys. Chem., 91(22), 5755-60
(English) 1987. CODEN: JPCHAX. ISSN: 0022-3654. DOCUMENT

TYPE: Journal CA Section: 7 (Enzymes)

The kinetics of sucrose inversion over an invertase catalyst
immobilized by porous glass particles was studied under high
pressures up to 127 MPa and at a temp. of 30°. The rate equation
derived by using the Michaelis-Menten type kinetic model well
represents reaction rates obtained for $E + S \rightleftharpoons ES \rightleftharpoons EF + G \rightleftharpoons E + F$
and $E + G \rightleftharpoons EG$, where E, S, ES, F, G, EF, and EG denote enzyme,
substrate, Michaelis complex, fructose, glucose, enzyme-fructose
complex, and enzyme-glucose (inhibitor) complex, resp. Utilizing the
rate equation, one can evaluate kinetic parameters such as the Vmax,
the Km, and the Ki as a function of pressure. The activation vol. (DV2\),
the vol. change (DVm) for the dissocn. of the Michaelis complex, and the
vol. change (DVi) for the dissocn. of the inhibitor complex were detd. to
be -29, 20, and 1 mL/mol, resp., at 0.1 MPa. A strong polarity induced
by the enzyme upon the transition state together with an incorporation
of 1 water mol. into the transition state would account for the fairly large
neg. activation vol.

Keywords

sucrose inversion immobilized invertase kinetics pressure

Index Entries

Kinetics, enzymic

Michaelis constant

of invertase immobilized deriv., pressure effect on

9001-57-4

immobilized, reaction kinetics of, pressure effect on

57-50-1, reactions

inversion of, by immobilized invertase, kinetics of, pressure effect
on

50-99-7, biological studies

sucrose inversion by immobilized invertase inhibition by, kinetics

of, pressure effect on

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106:196838

New principles of creating reactive adsorption layers in polymer colloid systems.

Tokarev, V. S.; Kucher, R. V.; Voronov, S. A.; Ryabova, O. Ya.; Min'ko, S. S.; Kurganskii, V. S. (Inst. Geol. Geokhim. Goryuch. Iskop., Lvov, USSR). Dokl. Akad. Nauk SSSR, 293(1), 166-9 [Phys. Chem.]

(Russian) 1987. CODEN: DANKAS. ISSN: 0002-3264. DOCUMENT

TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)

The rate consts. of initiation by peroxy groups of partially neutralized maleic acid-2-methyl-2-(tert-butylperoxy)-5-hexen-3-yne copolymer (I) in emulsion polymn. of styrene [100-42-5] in the presence of low-mol.-wt. peroxides at 333-363 K were increased from $(2.8-7.8) \cdot 10^{-8}$ to $(25.2-198) \cdot 10^{-8} \text{ s}^{-1}$ by immobilizing I on chem. pptd. CaCO_3 filler, which was achieved by chemisorption with formation of a I Ca salt [108278-79-1]. The polymn. in the presence of immobilized I was 1st order with respect to the initiator peroxy groups concn., suggesting an increased apparent concn. of I peroxy groups in the polymn. zone, as well as chain transfer on peroxy groups. The polymn. rate increased significantly with increased concn. of immobilized I.

Keywords

peroxy polymer polymn catalyst immobilization
styrene emulsion polymn kinetics catalyst
chemisorption polymn catalyst calcium carbonate

Index Entries

Chemisorption

of maleic acid-methyl-tert-butylperoxyhexenyne copolymer on calcium carbonate, catalytic activity in emulsion polymn. of styrene in relation to

Kinetics of polymerization

emulsion, radical, of styrene, in presence of calcium carbonate filler-immobilized maleic acid-methylbutylperoxyhexenyne copolymer

Polymerization catalysts

emulsion, radical, supported, maleic acid-methyl(tert-butylperoxy)hexenyne copolymer, on calcium carbonate, prepn. and activity of, for styrene 108278-79-1

catalysts, calcium carbonate filler-immobilized, for emulsion polymn. of styrene, prepn. and activity of 108278-78-0, partially neutralized

chemisorption of, on calcium carbonate fillers, catalytic activity in emulsion polymn. of styrene in relation to 471-34-1, uses and miscellaneous

fillers, maleic acid-methylbutylperoxyhexenyne copolymer immobilized on, catalysts, for emulsion polymn. of styrene, prepn. and activity of

100-42-5, reactions

polymn. of, emulsion, in presence of calcium carbonate filler-immobilized maleic acid-methylbutylperoxyhexenyne copolymer catalysts, kinetics of

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106:195961

Coordination-immobilized hemin - catalyst for mild oxidation of hydrocarbons.

Belyakova, L. A.; Kolotusha, T. P.; Serova, T. E.; Tertykh, V. A.; Yatsimirskii, K. B. (Inst. Fiz. Khim. im. Pisarzhevskogo, Kiev, USSR). Dokl. Akad. Nauk SSSR, 288(6), 1358-61 [Chem.] (Russian) 1986.

CODEN: DANKAS. ISSN: 0002-3264. DOCUMENT TYPE: Journal

CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds) Section cross-reference(s): 67

Samples of the title catalyst contg. hemin bound on 3 organosilicas (SiO₂)_n(CH₂)₃NHR (R = H, R₁, R₂) were used in liq.-phase oxidn. of cumene. Catalytic activity measured by O₂ absorption, was higher in samples contg. imidazole groups than in those with aminopropyl groups.

Keywords

cumene oxidn hemin silica catalyst
organosilica hemin oxidn catalyst

Index Entries

Oxidation catalysts
coordinatively bound hemin on silica, for cumene
107-10-8, silica-bound
7631-86-9, aminopropyl derivs.
108006-30-0, silica-bound
108006-31-1, silica-bound
carrier for hemin-contg. oxidn. catalyst for cumene
16009-13-5, silica-bound
catalyst, for cumene oxidn.
98-82-8
oxidn. of, immobilized hemin-on-silica catalysts for

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106:144730

Support effect on the properties of cobalt(II) tetraphenylporphyrin bonded to silica gel.
Romanovskii, B. V.; Kireev, S. G. (Mosk. Gos. Univ., Moscow, USSR). Zh. Fiz. Khim., 61(1), 218-19 (Russian) 1987. CODEN: ZFKHA9. ISSN: 0044-4537. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
The spectral and catalytic properties were studied for Co(II) tetraphenylporphyrin immobilized on SiO₂. The state of the support surfaces varies with the conditions of thermal treatment. There is a strong interaction between chelate modes and the support. The decompn. of H₂O₂ was studied under static conditions in alk. solns.

Keywords

cobalt porphyrin silica immobilized catalyst

Index Entries

Dissociation catalysts
cobalt(II) tetraphenylporphyrin, immobilized on silica gel
Catalysts and Catalysis
cobalt(II) tetraphenylporphyrin, immobilized on silica, spectral study of support effect on
14172-90-8
catalysts, immobilized on silica gel, spectral study of
7722-84-1, reactions
decompn. of, on cobalt(II) tetraphenylporphyrin catalyst
immobilized on silica gel

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106:90970

Catalysis by mono- and polynuclear compounds supported on zeolites. Lenarda, Maurizio; Ganzerla, Renzo; Caspar, J.; Graziani, M. (USSR). 5 Mezhdunar. Simp. po Svyazi Mezhd Gomoen. i Geterogen. Katal., Novosibirsk 15-19 Iyulya, 1986, Dokl., Novosibirsk, 3(Ch 2), 22-41

From: Ref. Zh., Khim. 1986, Abstr. No. 22B4282(Russian) 1986.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

catalyst zeolite support complex polynuclear

Index Entries

Zeolites, uses and miscellaneous
catalyst, with immobilized transition metal surface complexes
Transition metals, uses and miscellaneous
catalyst, zeolite-supported complex
Catalysts and Catalysis
Hydroformylation catalysts
Hydrogenation catalysts
Water gas shift reaction catalysts
zeolite-supported complexes,
7439-88-5, uses and miscellaneous
7440-04-2, uses and miscellaneous
7440-18-8, uses and miscellaneous
catalyst, zeolite-supported complex
1335-30-4
zeolites, catalyst, with immobilized transition metal surface complexes

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106:39169

Role of a surface in hydrosilylation catalysis by fixed Group VIII metal complexes.

Reikhsfel'd, V. O.; Skvortsov, N. K.; Brovko, V. S. (USSR). 5
Mezhdunar. Simp. po Svyazi mezhdru Gomogen. i Geterogen. Katal.,
Novosibirsk, 15-19 Iyulya, 1986. Dokl., Novosibirsk, 2(CH 1), 215-22
From: Ref. Zh., Khim. 1986, Abstr. No. 21B4282(Russian) 1986.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

hydrosilylation catalyst immobilized metal complex
Group VIII complex immobilized catalyst

Index Entries

Hydrosilylation catalysts
Group VIII complexes, immobilized on polymer or oxide support
Group VIII element compounds
complexes, catalyst, immobilized on polymer or oxide supports

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106:23822

Prediction of the stability of M-L-SiO₂-type heterogeneous metal-complex catalysts by complexing in solutions.

Lisichkin, G. V.; Kudryavtsev, G. V. (USSR). 5 Mezhdunar. Simp. po
Svyazi mezhdru Gomogen. i Geterogen. Katal., Novosibirsk, 15-19
Iyulya, 1986. Dokl., Novosibirsk, 2(CH 1), 84-103 From: Ref. Zh., Khim.
1986, Abstr. No. 21B4285(Russian) 1986. DOCUMENT TYPE:
Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

catalyst immobilized metal complex stability
silica immobilized metal complex catalyst

Index Entries

Coordination compounds
immobilized, on silica gel
Catalysts and Catalysis
metal complexes, immobilized on silica support
Silica gel, uses and miscellaneous
stability of metal complexes immobilized on

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106:23794

Structure and reactivity of heterogenized metal-complex catalytic systems.

D'yachkovskii, F. S.; Pomogailo, A. D. (USSR). 5 Mezhdunar. Simp. po Svyazi mezhdu Gomogen. i Geterogen. Katal., Novosibirsk, 15-19 Iyulya, 1986. Dokl., Novosibirsk, 2(CH 1), 134-56 From: Ref. Zh., Khim. 1986, Abstr. No. 21B4284(Russian) 1986. DOCUMENT TYPE: Journal; General Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

review catalyst structure reactivity heterogeneous
complex metal heterogeneous catalyst review
immobilized complex heterogeneous catalyst review

Index Entries

Polymers, uses and miscellaneous
catalysts immobilized on
Coordination compounds
catalysts, structure and reactivity of polymer-immobilized
Catalysts and Catalysis
polymer-immobilized metal complexes, structure and reactivity of

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115:196761

Preparation and properties of soluble and polysiloxane-supported (ether-phosphine)ruthenium(II) complexes.

Lindner, E.; Bader, A.; Mayer, H. A. (Inst. Anorg. Chem., Eberhard-Karls-Univ., Tuebingen W-7400, Fed. Rep. Ger.). Z. Anorg. Allg. Chem., 598-599, 235-52 (German) 1991. CODEN: ZAACAB.

ISSN: 0044-2313. DOCUMENT TYPE: Journal CA Section: 78
(Inorganic Chemicals and Reactions) Section cross-reference(s): 22, 29

Phosphine-modified polysiloxanes of the type $\text{sSiO}_2 \cdot [\text{SiO}_3/2(\text{CH}_2)_6\text{P}(\text{Ph})\text{R}]$ (I; $x = 0-3$) were prep'd. by hydrolytic condensation of $(\text{MeO})_3\text{Si}(\text{CH}_2)_6\text{P}(\text{Ph})\text{R}$ (II; $\text{R} = \text{CH}_2\text{CH}_2\text{OMe}$, 2-furylmethyl, 2-(1,4-dioxanylmethyl), Ph). Crosslinking was achieved by cocondensation of II and $\text{Si}(\text{OEt})_4$. $2\text{SiO}_2 \cdot [\text{SiO}_3/2(\text{CH}_2)_6\text{P}(\text{Ph})\text{CH}_2\text{CH}_2\text{OMe}]$ (Q) was investigated by ^{31}P and ^{29}Si CPMAS NMR-spectroscopy, esp. in view of a quantification of silyl species which revealed the following ratios: $\text{T}_2:\text{T}_4:\text{Q}_2:\text{Q}_3:\text{Q}_4 = 76:158:48:135:82$. Reaction of $\text{RuCl}_2(\text{PPh}_3)_3$ with 3 mol of II ($\text{R} = \text{CH}_2\text{CH}_2\text{OMe}$) (L) gave fluxional $\text{RuCl}_2(\text{L-P},\text{O})(\text{L-P})_2$. From its temp.-dependent $^{31}\text{P}\{^1\text{H}\}$ -NMR spectrum the temps. of coalescence

and the corresponding activation enthalpies could be estd. at -25° (46 kJ mol $^{-1}$) and $+20^{\circ}$ (55 kJ mol $^{-1}$). Sol. II and their insol. counterparts I were treated with $[\text{RuCl}_2(\text{CO})_2]_n$ to give all-trans- $\text{RuCl}_2(\text{CO})_2(\text{PR}_3)_2$ (III). On heating (120°) III was transformed into isomeric cis,cis,trans- $\text{RuCl}_2(\text{CO})_2(\text{PR}_3)_2$. Decarbonylation occurred on irradiation of III. Polysiloxane-supported Ru complexes are active in the heterogeneous hydrogenation of crotonaldehyde. At $p(\text{H}_2) = 50$ bar, $T = 120^{\circ}$, reaction time = 190 min, and at a molar ratio of aldehyde: Ru = 250:1, all-trans- $\text{RuCl}_2(\text{CO})_2(\text{Q})_2$ effected a conversion of 50%, crotyl alc. being formed in comparatively high selectivities. No loss of metal or ligand from the support could be obsd.

Keywords

fluxionality ruthenium carbonyl ether phosphine complex
ruthenium carbonyl ether phosphine supported unsupported
polysiloxane supported ruthenium phosphine complex
hydrogenation catalyst ruthenium complex polysiloxane supported
isomerization ruthenium carbonyl ether phosphine
decarbonylation ruthenium carbonyl ether phosphine complex

Index Entries

Nuclear magnetic resonance
of ruthenium (methoxyethyl)phenyl(trimethoxysilylhexyl)phosphine
complex, phosphorus-31
Decarbonylation
of ruthenium carbonyl
(methoxyethyl)phenyl(trimethoxysilylhexyl)phosphine
complex free and immobilized on silica
Isomerization
of ruthenium carbonyl trimethoxysilylhexylphosphine complexes free
and immobilized on silica
Fluxional rearrangement
of ruthenium methoxyethyl(phenyl)(trimethoxysilylhexyl)phosphine
complex
Hydrogenation catalysts
ruthenium carbonyl hexyl(methoxyethyl)phenylphosphine complex
immobilized on silica
123-72-8
504-61-0
4088-60-2
89308-14-5
formation of, in hydrogenation of crotonaldehyde in presence of
ruthenium carbonyl hexyl(methoxyethyl)phenylphosphine
complex free and immobilized on silica
109011-62-3
hydrogenation of crotonaldehyde in presence of
123-73-9
hydrogenation of, in presence of ruthenium
hexyl(methoxyethyl)phenylphosphine carbonyl complex free
and immobilized on silica
7723-14-0, unspecified
nuclear magnetic resonance, of ruthenium
(methoxyethyl)phenyl(trimethoxysilylhexyl)phosphine
complex, phosphorus-31
136674-00-5
prepn. and fluxional rearrangement of
136779-15-2, silica-bound
prepn. and isomerization and decarbonylation and catalysis of, in
hydrogenation of crotonaldehyde
136674-01-6
prepn. and isomerization and decarbonylation and reaction of, with
silicon ethoxide
136674-02-7

136779-16-3, silica-bound
136779-18-5
prepn. and isomerization of
136674-04-9
136735-78-9
136735-79-0
prepn. and photoisomerization of
136674-09-4, silica-bound
prepn. and reaction of, with carbon monoxide
136661-07-9, silica-modified
prepn. and reaction of, with ruthenium carbonyl chloro polymer
136674-03-8
prepn. and reaction of, with silicon ethoxide
7631-86-9, hexylphosphines modified
18298-00-5, silica-modified
136661-06-8, silica-modified
136661-60-4, silica-modified
136674-05-0
136674-06-1, silica-bound
136674-07-2, silica-bound
136674-08-3, silica-bound
136698-72-1
136698-88-9, silica-bound
prepn. of
16369-40-7
reaction of, with (trimethoxysilylhexyl)phosphines
15529-49-4
reaction of, with
methoxyethyl(phenyl)(trimethoxysilylhexyl)phosphine
121949-22-2
121949-26-6
135339-89-8
136661-08-0
136661-59-1
reaction of, with silicon ethoxide, silica-bound phosphine by
78-10-4
reaction of, with trimethoxysilylhexylphosphines, silica-bound
phosphines by

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115:167485

Mixed transition metal halides in the synthesis of highly-disperse metallic and metal complex catalysts. VIII. Liquid-phase oxidation of hydrocarbons in the presence of bimetallic catalysts based on fixed copper(II), manganese(II), and cobalt(II) halides. Matsenko, G. P.; Berentsveig, V. V.; Vorontsova, N. V.; Yuffa, A. Ya. (Tyumen. Gos. Univ., Tyumen, USSR). Kinet. Katal., 32(3), 630-5 (Russian) 1991. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 22, 45 A synergistic effect was obsd. during cumene or cyclohexene liq. phase oxidn. in the presence of complex bimetallic catalysts based on Cu(II), Mn(II), or Co(II) halides immobilized on SiO₂ supports. The non-additive nature of component catalytic activities is due to the formation of surface heteropolynuclear metal complexes. A mechanism is proposed for active surface layer formation which takes into account the island distribution of the active components and the possibility of heteropolynuclear surface complex formation.

Keywords

oxidn catalyst transition metal grafted silica
hydrocarbon oxidn surface heteropolynuclear metal complex

Index Entries

Transition metal halides
catalysts, immobilized on silica support for liq. phase oxidn. of hydrocarbons
Hydrocarbons, reactions
oxidn. of, in liq. phase on transition metal heteropoly nuclear surface complex catalyst
Oxidation catalysts
transition metal heteropoly nuclear halo complexes, immobilized on silica supports for hydrocarbons
7439-96-5, uses and miscellaneous
7440-48-4, uses and miscellaneous
7440-50-8, uses and miscellaneous
catalysts, immobilized on silica support, hydrocarbon oxidn. on 98-82-8
110-83-8, reactions
oxidn. of, in liq. phase on transition metal heteropoly nuclear surface complex catalyst
7447-39-4, reaction products with silica
7631-86-9, reaction products with transition metal chlorides
7646-79-9, reaction products with silica
7773-01-5, reaction products with silica
surface, catalysts, for liq. phase oxidn. of hydrocarbons

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115:12251

Acid-catalyzed cracking of surface-immobilized 1,3-diphenylpropane in dispersed solids.
Buchanan, A. C., III; Britt, P. F.; Biggs, C. A. (Chem. Div., Oak Ridge Natl. Lab., Oak Ridge, TN 37831-6197, USA). Prepr. Pap. - Am. Chem. Soc., Div. Fuel Chem., 36(2), 536-41 (English) 1991. CODEN: ACPAI. ISSN: 0569-3772. DOCUMENT TYPE: Journal CA Section: 51 (Fossil Fuels, Derivatives, and Related Products) Section cross-reference(s): 25
Surface-supported 1,3-diphenylpropane [prepd. by reaction of p-HOC₆H₄(CH₂)₃Ph with fumed SiO₂] was investigated as a model system for acid-catalyzed cracking in dispersed solids, esp. with respect to coal liquefaction and hydrolysis. Pyrolysis of this reaction system gave a product distribution consistent with carbenium ion intermediates and solid-state interaction between the support and the substrate.

Keywords

cracking silica immobilized phenylpropane
coal liquefaction phenylpropane cracking

Index Entries

Coal liquefaction
reactions of silica-immobilized diphenylpropane in relation to 7631-86-9, uses and miscellaneous
catalyst, for cracking of surface-immobilized diphenylpropane 34591-21-4
reaction of, with fumed silica
1081-75-0
surface-immobilized, cracking of, coal liquefaction in relation to

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114:50301

Catalytic properties of photoimmobilized iron-molybdenum complex catalysts in oxidative ammonolysis of propylene.

Belousov, V. M.; Kashuba, E. V. (Inst. Fiz. Khim., Kiev, USSR). Ukr. Khim. Zh. (Russ. Ed.), 56(8), 814-18 (Russian) 1990. CODEN: UKZHAU. ISSN: 0041-6045. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 22, 35, 74
Photoimmobilized Mo, Fe, or Fe-Mo oxidative ammonolysis catalysts for propene promote the reaction at low temps. (313-353 K). Acrylonitrile forms on Mo-contg. catalysts and polyacrylonitrile forms on Fe contg. catalysts. Both monomer and polymer are formed on Fe-Mo catalysts.

Keywords

iron molybdenum oxidative ammonolysis catalyst
propene oxidative ammonolysis catalyst
acrylonitrile prepn iron molybdenum catalyst
photoimmobilized iron molybdenum catalyst

Index Entries

Ammoxidation catalysts
iron-molybdenum, for propene, prepn. of photoimmobilized
115-07-1, reactions
ammoxidn. of, on iron-molybdenum photo-immobilized catalysts
7439-89-6, uses and miscellaneous
7439-98-7, uses and miscellaneous
catalyst, for ammoxidn. of propene, prepn. of photoimmobilized
107-13-1, preparation
25014-41-9
prepn. of, by propene ammoxidn. on iron-molybdenum
photoimmobilized catalysts

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114:7288

Study of immobilized catalysts. XXV. Mechanism of decomposition of trichloromethyltitanium(IV) complexes with polyacrylonitrile grafted to different polymeric substrates.
Serebryanaya, I. V.; Khrushch, N. E.; Leonov, A. G.; Pomogailo, A. D.; D'yachkovskii, F. S. (Inst. Khim. Fiz. im. Semenova, Chernogolovka, USSR). Kinet. Katal., 31(3), 540-5 (Russian) 1990. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers)
In an attempt to evaluate stability and activity of polymer-supported MeTiCl₃ (I) polymn. catalysts, the mechanism of Ti-C bond cleavage in I complexes with various ligands was studied. Acrylonitrile-grafted polyethylene, polypropylene, and PTFE, as well as polyacrylonitrile (II) and MeCN were used as ligands. The Ti-C bond cleavage in 1:2 I-MeCN complexes proceeded according to a homolytic mechanism, whereas the Ti-C bond cleavage in I complexes with the polymers proceeded according to a coordinated mechanism with participation of C-N or C-H bonds of the polymer. I formed in soln. only 1 type of kinetically homogeneous complex with II. However, I formed with the graft copolymers 2 types of kinetically different complexes. Activation energies and rate consts. of decompn. of these complexes were detd. Selection of various polymeric supports made it possible to realize bonding of the TiCl₃ group predominantly with the CN or the CH groups.

Keywords

acrylonitrile polymer support methyltrichlorotitanium catalyst
polymn catalyst trichloromethyltitanium polymer supported
stability chloromethyltitanium catalyst polymer supported
kinetics decompn trichloromethyltitanium immobilized catalyst
titanium complex graft polymer decompn

Index Entries

Kinetics of polymer degradation
of trichloromethyltitanium-acrylonitrile polymer complexes
Polymer degradation
of trichloromethyltitanium-acrylonitrile polymer complexes,
mechanism of
Polymerization catalysts
trichloromethyltitanium, acrylonitrile polymer-supported, mechanism
and kinetics of decompn. of
Polymer-supported reagents
trichloromethyltitanium, polymn. catalysts, on acrylonitrile polymers,
mechanism and kinetics of decompn. of
Bond cleavage
carbon-titanium, in trichloromethyltitanium-acrylonitrile polymer
complexes
Fluoropolymers
graft, supports, for trichloromethyltitanium catalysts for polymn.,
titanium-carbon bond cleavage in, mechanism and kinetics
of
33198-45-7
decompn. of, kinetics and mechanism of, as model for
polymer-supported trichloromethyltitanium polymn. catalysts
7440-32-6, complexes with acrylonitrile copolymers
polymn. catalysts, carbon-titanium bond cleavage in, mechanism
and kinetics of
2747-38-8
polymn. catalysts, polymer-supported, carbon-titanium bond
cleavage in, kinetics and mechanism of
25014-41-9
106335-29-9
107493-67-4
115418-63-8
supports, for trichloromethyltitanium catalysts for polymn.,
titanium-carbon bond cleavage in, mechanism and kinetics
of

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113:179048

Determination of interionic distances in cobalt containing polymeric
catalysts by the spin label method.

Nikitina, A. V.; Maslov, S. A.; Rubailo, V. L. (Inst. Khim. Fiz., Moscow,
USSR). Khim. Fiz., 8(12), 1715-20 (Russian) 1989. CODEN: KHFID9.

ISSN: 0207-401X. DOCUMENT TYPE: Journal CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 37, 77

The Co-Co sepn. in polymeric Co-contg. catalysts was detd. by using
the ESR spin label method. The sepn. was calcd. from the broadening
of the central component of the spectrum and also from the calibration
relation for the spectrum shape as a function of nitroxide radical concn.
in model CoCl₂-nitroxide radical-alc. solns. An IR spectral study
showed that nitroxide radicals coordinate to surface Co ions. Catalytic
activities for liq. phase oxidn. of cyclohexene are higher at larger
Co-Co sepns. (13-27 Å).

Keywords

cobalt polymer immobilized catalyst

Index Entries

Catalysts and Catalysis
Oxidation catalysts

cobalt, polymer-immobilized, ESR spin probe study of
cobalt-cobalt distance in
14691-88-4
ESR spin probe, in study of cobalt-cobalt distance in
polymer-immobilized catalysts
94649-31-7
111866-33-2
111866-34-3
111866-36-5
111866-37-6
catalysts, ESR spin probe study of cobalt-cobalt sepn. in
7440-48-4, uses and miscellaneous
catalysts, polymer-immobilized, ESR spin probe study of
cobalt-cobalt distance in
7440-48-4, complexes with acrylic acid-polyethylene polymer
9010-77-9, cobalt complexes
surface, catalyst, ESR spin probe study of cobalt-cobalt sepn. in

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113:173874
Molecular dynamics of chains and reactive centers in gel-immobilized
catalytic systems on the basis of SKEPT-1,2-polybutadiene.
Volodin, V. V.; Zalevskaya, O. A.; Ovalina, I. N.; Potapov, G. P.;
Shapiro, A. M.; Smetanyuk, V. I.; Kabanov, V. A. (Inst. Neftekhim. Sin.
im. Topchieva, Moscow, USSR). Vysokomol. Soedin., Ser. B, 32(5),
357-62 (Russian) 1990. CODEN: VYSBAI. ISSN: 0507-5483.
DOCUMENT TYPE: Journal CA Section: 39 (Synthetic Elastomers and
Natural Rubber)
An ESR study of ethylene-propylene-ethylidenenorbornene SKEPT
rubber graft copolymers with 1,2-polybutadiene (I), their analogs contg.
org. P groups, and gel complexes with Ni salts using spin probes and
labels indicated incompatibility of the substrate and grafted chains and
hindered segmental motion for the chains in inclusions of grafted I.
Intraglobular crosslinking in grafted I inclusions led to their loss of high
elasticity and to their low solvatability by solvent mols. during swelling of
the gel complexes in aliph. solvents. The mosaic structure of the
SKEPT-I carrier is optimal for constructing high-temp. gel-immobilized
catalyst systems since the mobility of the reactive centers can be
limited and deactivation can be suppressed.

Keywords

EPDM rubber polybutadiene grafted
ethylidenenorbornene ethylene propene rubber grafted
graft rubber catalyst support
mol mobility grafted EPDM rubber
nickel catalyst grafted rubber support

Index Entries

Polymer-supported reagents
catalysts, on butadiene-grafted
ethylene-ethylidenenorbornene-propylene rubber, mobility
of reactive centers in
Chains, chemical
mol. mobility of, of polybutadiene-grafted
ethylene-propylene-ethylidenenorbornene rubber, for
catalyst supports
Rubber, synthetic
ethylene-ethylidenenorbornene-propene, mol. dynamics of chains in
SKEPT, grafting effect on
Rubber, synthetic
ethylene-ethylidenenorbornene-propene, butadiene-grafted,
phosphorus-contg., mol. dynamics of chains in, for catalyst

supports

Catalysts and Catalysis

supports, mol. mobility in polybutadiene-grafted

ethylene-ethylidenenorbornene-propene rubber as

3264-82-2

catalysts, mol. mobility in butadiene-grafted

ethylene-ethylidenenorbornene-propylene rubber supports

for

9003-17-2

of 1,2-configuration, mol. motion of chains of, grafting effect on

25038-36-2

rubber, mol. motion of, effect of modification with polybutadiene on

130054-92-1

130054-92-1, organophosphorus group-contg.

rubber, mol. motion of, for catalyst supports

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113:171683

Process for the preparation of chiral propanoic acids via enantioselective enzymic hydrolysis of their water-soluble esters.

Matson, Stephen L.; Wald, Stephen A.; Zepp, Charles M.; Dodds, David R. (Sepracor, Inc., USA). PCT Int. Appl. WO 8909765 A1 19 Oct 1989, 209 pp. DESIGNATED STATES: W: AU, BB, BG, BR, DK, FI, HU, JP, KR, LK, MC, MG, MW, NO, RO, SD, SU; RW: AT, BE, BJ, CF, CG, CH, CM, DE, FR, GA, GB, IT, LU, ML, MR, NL, SE, SN, TD, TG.

(World Intellectual Property Organization) CODEN: PIXXD2. CLASS: ICM: C07C069-76. ICS: C07C069-00; C07C149-20. APPLICATION: WO 89-US1429 6 Apr 1989. PRIORITY: US 88-178735 7 Apr 1988; US 88-178743 7 Apr 1988; US 88-178950 7 Apr 1988. DOCUMENT TYPE: Patent CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds) Section cross-reference(s): 1, 16

Racemic propanoic acids R²CH₂CHR¹CO₂H [I; R¹ = alkyl, aryl(oxy), OH, halo; R² = H, PhCH₂, SH], e.g., Naproxen, Ibuprofen, and 2-chloropropanoic acid, were resolved by enantioselective enzymic hydrolysis of their H₂O-sol. esters R²CH₂CHR¹CO₂RY¹ (II; R = alkyl, aryl; Y¹ = quaternary amine, inorg. acid residue, and their salts) in a multiphase system comprising H₂O and a H₂O-immiscible solvent, optionally sepd. by a polymeric membrane. The preferential hydrolysis of 1 of the enantiomers II was effected and the chiral acid, being less sol. in H₂O, was extd. into the org. phase. Thus, 10 mL Ibuprofen sulfomethyl ester Na salt (III) and 100 mg of a proteinase (P-8775, SIGMA) were kept 20 h at 20-22° in 100 mL of 0.2 M phosphate buffer pH 7.0, the reaction mixt. was dild. with 1 vol. H₂O and 1 vol. satd. NaCl, acidified to pH 1-2, and extd. with tert-BuOMe or Et₂O to give 780 mg R-I (R¹ = 4-Me₂CHCH₂, R² = H) (IV), with a conversion of 39% and an enantiomeric excess (e.e.) of >99%. In an extractive dispersion variation of the title process, a similar buffer soln. of III (3.38 g) and 100 mg proteinase were stirred vigorously 3.5 h with n-hexane to give 490 mg IV (conversion 24%). The residual S-I (1.13 g) was recovered from the H₂O phase and, optionally, reesterified to a racemic ester mixt. and recycled to the sepn. process. By using a 2-stage extractive membrane reactor procedure (description and sketches given) a conversion of 24% and an e.e. value of 99.3% were achieved after 6.3 h with similar reactants.

Keywords

propanoate ester resoln enantioselective hydrolysis
proteinase enantioselective hydrolysis propanoate
membrane immobilized proteinase propanoate resoln
ibuprofen naproxen ester resoln

Index Entries

Reactors

biocatalytic, membrane, for prepn. of chiral propanoic acids,
immobilized proteinases in

Resolution

enzymic, of propanoic esters, by enantioselective hydrolysis with
proteases, racemic propanoic acids by, methods for

9014-01-1

catalyst, for enantioselective hydrolysis of propanoate esters

23981-80-8

conversion of, to acid chloride, in enzymic kinetic resohn. procedure

126962-40-1

conversion of, to phosphate ester, in enzymic kinetic resohn.

procedure

108-01-0

esterification by, of ibuprofen acid chloride, in kinetic resohn.

procedure

1562-00-1

esterification by, of racemic propanoic acids, in enzymic kinetic
resohn. procedue

126962-41-2

esterification of, with chlorosulfonic acid, in enzymic kinetic resohn.

procedure

15687-27-1

esterification of, with hydroxyalkyl sulfates, in enzymic kinetic resohn.

procedure

7664-38-2, reactions

esterification of, with propanoic acid hydroxyethyl ester, in enzymic
kinetic resohn. procedure

7790-94-5

esterification of, with propanoic acid hydroxypropyl ester, in
enzymic kinetic resohn. procedure

1120-71-4

1633-83-6

esterification of, with racemic propanoic acid, in enzymic kinetic
resohn. procedure

870-72-4

esterification of, with racemic propanoic acids, in enzymic kinetic
resohn. procedure

9013-79-0

from pig liver, catalyst, for enantioselective hydrolysis of
propanoate esters

9001-62-1

from Candida cylindracea, catalyst, for enantioselective hydrolysis
of propanoate esters

9001-92-7

from Streptomyces griseus, catalyst, for stereoselective
hydrolysis of propanoate esters

25014-41-9

membrane, for sepn. of propanoic acids from propanoate esters

29811-44-7

64622-19-1

121038-75-3

126962-21-8

126962-22-9

126962-23-0

126962-24-1

126962-25-2

126962-26-3

126962-27-4

126962-28-5

126962-29-6

126962-31-0

126962-33-2

126962-34-3

126962-38-7

126962-42-3
 prepn. and enantioselective enzymic hydrolysis of
 126962-35-4
 126962-36-5
 126962-37-6
 prepn. and enzymic hydrolysis of
 126962-39-8
 prepn. and esterification by, of racemic propanoic acids, in enzymic
 kinetic resolu. procedure
 38835-18-6
 prepn. and esterification of, in enzymic kinetic resolu. procedure
 64622-40-8
 prepn. and permethylation of, in enzymic kinetic resolu. procedure
 814-68-6
 29811-44-7
 67714-31-2
 74345-73-6
 108351-63-9
 113547-31-2
 126962-43-4
 prepn. and reaction of, in enzymic kinetic resolu. procedure
 51146-57-7
 126962-44-5
 126962-45-6
 126962-46-7
 126962-47-8
 126962-48-9
 126962-49-0
 126962-51-4
 126962-53-6
 126962-54-7
 126962-55-8
 126962-56-9
 prepn. of, by enantioselective enzymic hydrolysis
 126962-37-6
 prepn. of, by enzymic enantioselective hydrolysis
 7474-05-7
 22204-53-1
 prepn. of, by enzymic enantioselective hydrolysis of water-sol.
 esters
 75-89-8
 111-87-5, reactions
 598-78-7
 3179-63-3
 7623-09-8
 20421-33-4
 74431-50-8
 74431-52-0
 76497-39-7
 reaction of, in enzymic kinetic resolu. procedure
 9004-34-6, uses and miscellaneous
 regenerated, proteinase immobilization on, in prepn. of racemic
 propanoic acids

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113:104104
 Covalent immobilization of ultrafine platinum particles onto crosslinked
 polymer support and their application to catalysis.
 Ohtaki, Michitaka; Toshima, Naoki; Komiyama, Makoto; Hirai,
 Hidefumi (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Bull. Chem. Soc.
 Jpn., 63(5), 1433-40 (English) 1990. CODEN: BCSJA8. ISSN:
 0009-2673. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
 Reaction Kinetics, and Inorganic Reaction Mechanisms) Section
 cross-reference(s): 37, 45

Ultrafine particles of Pt were prep'd as stable aq. dispersion by a photoredn. method in the presence of sol. protective polymers. By use of the protective polymer with Me acrylate residues as a reactive group, the polymer-protected ultrafine Pt particles were successfully immobilized onto crosslinked polymers supports with amino groups. The present immobilization was attributed to the formation of amide bonds by the reaction of Me acrylate residues in the protective polymer with amino groups in the support, and the immobilization mechanism was investigated by the model reaction using protective polymer with p-nitrophenyl acrylate residues as a reactive group. The immobilized Pt particles obtained show high catalytic activity for hydrogenation of olefin and specific substrate selectivity due to a hydrophilic-hydrophobic interaction between the support and the substrate.

Keywords

platinum immobilized crosslinked polymer support prepn
hydrogenation olefin platinum polymer catalyst

Index Entries

Hydrogenation catalysts

ultrafine particles of platinum immobilized on crosslinked polymer support, for olefins, prepn. and activity of
27155-03-9

119554-14-2

catalysts from ultrafine particles of platinum immobilized on crosslinked polymer support by, prepn. of
129037-83-8

catalysts from ultrafine particles of platinum immobilized on, prepn. of

7440-06-4, uses and miscellaneous

catalysts from ultrafine particles of, immobilized on crosslinked polymer support, prepn. of

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113:7677

Characterization of the polymer-supported phase-transfer catalyst.

Chou, Su Chu; Weng, Hung Shan (Dep. Chem. Eng., Natl. Cheng Kung Univ., Tainan 70101, Taiwan). J. Appl. Polym. Sci., 39(8), 1665-79

(English) 1990. CODEN: JAPNAB. ISSN: 0021-8995. DOCUMENT

TYPE: Journal CA Section: 38 (Plastics Fabrication and Uses)

Polymer-supported phase transfer catalysts, which were prep'd. by immobilizing Bu₃N on chloromethylated polystyrene, were

characterized by optical microscope, SEM, electron-probe microanal.

(EPMA), and ESCA. Both optical photograph and electron micrograph

showed that the exterior surface of polymer support became wrinkly

after immobilization under dry conditions. The surface of the triphase catalyst may become smooth after being swelled by solvent. From the

ESCA anal. at a depth of ~100 Å, it was found that 46.5% of covalent chloride in the polymer had reacted with Bu₃N and converted to

quaternary ammonium chloride. However, the EPMA, which analyzed

at a depth of ~1 mm, gave a value of only 31% and the titrn. method

which was for the whole bead gave 14.3%. These results reveal that

the catalyst has a higher content of quaternary ammonium chloride in

the outer shell. It is concluded that the high activity of this catalyst is due

to the fact that it contains both hydrophobic and hydrophilic groups on

the exterior surface, and more active species in the outer shell.

Keywords

polymer supported catalyst structure activity
surface analysis polymer supported catalyst

phase transfer polymer supported catalyst
butylamine immobilized chloromethylated polystyrene catalyst

Index Entries

Surface analysis
of quaternized chloromethylated polystyrene-supported
phase-transfer catalysts, activity in relation to
Polymer-supported reagents
quaternized chloromethylated polystyrene, as phase-transfer
catalysts, surface characterization of, activity in relation to
Catalysts and Catalysis
phase-transfer, quaternized chloromethylated
polystyrene-supported, surface characterization of, activity
in relation to
Polymer morphology
surface, of quaternized chloromethylated polystyrene-supported
phase-transfer catalysts, activity in relation to
102-82-9, reaction products with chloromethylated polystyrene
9003-53-6, chloromethylated, reaction products with tributylamine
catalysts, phase-transfer, surface characterization of, activity in
relation to

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112:213560

Hydrogen peroxide-related enzyme in biosensor for body fluid analysis.
Yamaguchi, Hideichiro; Uchida, Naoto; Ushizawa, Norihiko;
Shimomura, Takeshi; Koyama, Noboru (Terumo Corp., Japan). Jpn.
Kokai Tokkyo Koho JP 01153952 A2 16 Jun 1989 Heisei, 7 pp.
(Japan) CODEN: JKXXAF. CLASS: ICM: G01N027-30. ICS:
G01N027-46. APPLICATION: JP 87-312291 11 Dec 1987.
DOCUMENT TYPE: Patent CA Section: 9 (Biochemical Methods)
The title biosensor consists of a conductive or semiconductive base
(e.g. C structure) coated with a redox catalyst layer (i.e. biphenyl
electrooxidn. polymer layer) that catalyzes redox reaction of H₂O₂ and a
membrane-immobilized enzyme (e.g. glucose oxidase) that catalyzes
the formation or consumption of H₂O₂. The redox potential in the redox
catalyst layer at pH 1.0 is >+0.5 V (relative to a calomel electrode). The
biosensor can be economically produced.

Keywords

bioelectrode glucose urea

Index Entries

Body fluid
anal. of, enzyme biosensor for, redox catalyst layer in
Metals, uses and miscellaneous
Oxides, uses and miscellaneous
as conductive or semiconductive structure, in enzyme biosensor for
body fluid anal.
Electrodes
bio-, enzyme, with immobilized glucose oxidase or urease, redox
catalyst layer in, as biosensor for body fluid anal.
12672-71-8
7440-44-0, uses and miscellaneous
7782-42-5, uses and miscellaneous
as conductive or semiconductive structure, in enzyme biosensor for
body fluid anal.
26008-28-6, polymers
as redox layer in enzyme biosensor for body fluid anal.
50-99-7, analysis
detn. of, enzyme biosensor for, redox catalyst layer in relation to

9001-37-0

9002-13-5

immobilized, on bioelectrode for body fluid anal., redox catalyst layer in relation to

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112:96894

Agarose-chymotrypsin as a catalyst for peptide and amino acid ester synthesis in organic media.

Blanco, Rosa M.; Guisan, Jose M.; Halling, Peter J. (Dep. Biosci. Biotechnol., Univ. Strathclyde, Glasgow G1 1XW, UK). Biotechnol. Lett., 11(11), 811-16 (English) 1989. CODEN: BILED3. ISSN: 0141-5492. DOCUMENT TYPE: Journal CA Section: 16

(Fermentation and Bioindustrial Chemistry)

Chymotrypsin immobilized within agarose gels by multi-point covalent attachment is a useful catalyst for peptide or amino acid ester synthesis in mainly org. media. Moist gel beads (optionally contg. 1 reactant) may be suspended in org. phases based on EtOAc, CH₃CCl₃, or pentan-3-one.

Keywords

agarose immobilized chymotrypsin peptide ester prepn

Index Entries

Amino acids, esters

Peptides, esters

esters, prepn. of, by agarose-immobilized chymotrypsin in org. media

9004-07-3

agarose-immobilized, peptides and amino acid esters prepn. with

9012-36-6

chymotrypsin immobilized in, peptides and amino acid esters

prepn. with

2382-80-1

65356-77-6

125407-63-8

prepn. of, by agarose-immobilized chymotrypsin in org. media

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111:149194

Catalysis by polymer-bound coenzyme models.

Challa, G.; Van den Berg, H. J.; Schoo, H. F. M.; Blokzijl, W.; Pandit, U. K. (Lab. Polym. Chem., State Univ. Groningen, Groningen 9747 AG, Neth.). React. Polym., Volume Date 1988, 10(2-3), 219-30 (English) 1989. CODEN: REPLEN. DOCUMENT TYPE: Journal; General

Review CA Section: 7 (Enzymes) Section cross-reference(s): 16

A review, with 16 refs., on the immobilization of coenzyme models, catalysis by these immobilized coenzymes, and the re-utilization of these immobilized catalysts in batch or continuous processes. Thiamin and flavin models were immobilized, tested, and optimized as catalysts in model reactions. Also discussed is the mechanism of benzoin condensation in regards to the role of the basic co-catalyst.

Keywords

coenzyme model immobilization catalyst review

batch process immobilized coenzyme model review

Index Entries

Polymers, uses and miscellaneous

coenzyme models immobilized on, catalysis by
 Coenzymes
 immobilized, catalysis by
 Immobilization, biochemical
 of coenzyme models, catalysis in relation to
 Coenzymes
 flavin, immobilized, catalysis by
 59-43-8, uses and miscellaneous
 immobilized, catalysis by

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110:213328

Papain immobilized on silica in the Boc-Leu-enkephalin synthesis.
 Ogii, S. A.; Tertykh, V. A.; Mitin, Yu. V. (USSR). Dokl. Akad. Nauk Ukr.
 SSR, Ser. B: Geol., Khim. Biol. Nauki, (9), 76-9 (Russian) 1987.
 CODEN: DNNADO. ISSN: 0201-8454. DOCUMENT TYPE: Journal
 CA Section: 34 (Amino Acids, Peptides, and Proteins) Section
 cross-reference(s): 7
 Papain was immobilized on porous silica (silochrome) treated with
 g-aminopropyltriethoxysilane and activated with cyanuric chloride. The
 immobilized papain catalyzed the coupling of
 Boc-Tyr-Gly-OCH₂CO-Gly-OH (Boc = Me₃CO₂C) with
 H-Gly-Phe-Leu-OH at pH 9.5 (20-25 min at room temp.). The yield
 (60%) of Boc-Leu-enkephalin was not lower than in the reaction
 catalyzed by native enzyme.

Keywords

papain immobilization silica catalyst peptide coupling
 leucine enkephalin

Index Entries

Amidation catalysts
 peptide coupling, papain immobilized on silica, for synthesis of
 N-tert-butoxycarbonyl-leucine-enkephalin
 9001-73-4
 immobilization on silica, for synthesis of
 N-tert-butoxycarbonyl-leucine-enkephalin
 15373-56-5
 peptide coupling of, papain immobilized on silica as catalysts for
 120569-70-2
 peptide coupling of, with glycylphenylalanylleucine, papain
 immobilized on silica as catalysts for
 64963-27-5
 prepn. of, papain-immobilized on silica as catalysts for

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110:153708

Characteristics of dimerization of 1,3-butadiene in the presence of
 cobalt gel-immobilized catalytic systems.
 Kabanov, V. A.; Smetanyuk, V. I.; Kalinina, L. P.; Popov, V. G.;
 Prudnikov, A. I. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, USSR).
 Kinet. Katal., 29(4), 984-7 (Russian) 1988. CODEN: KNKTA4. ISSN:
 0453-8811. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic
 Compounds)
 Dimerization of 1,3-butadiene in the presence of a Co-gel complex
 catalyst [crosslinked graft copolymer of ethylene-propylene rubber and
 poly(4-vinylpyridine) contg. CoCl₂] activated by Et₃Al at 298-323 K
 gave 98% CH₂:CHCHMeCH:CHCH:CH₂. Optimal conditions for the
 dimerization were detd.

Keywords

dimerization butadiene cobalt catalyst
heptatriene methyl
octatriene

Index Entries

Dimerization catalysts
cobalt-gel complex, for butadiene
Dimerization
of butadiene, methylheptatriene from cobalt-gel complex-catalyzed
119756-61-5
catalyst, with cobalt dichloride, for dimerization of butadiene
7646-79-9, uses and miscellaneous
catalyst, with ethylene-propylene rubber graft copolymer with
poly(vinylpyridine), for dimerization of butadiene
106-99-0, reactions
dimerization of, in presence of cobalt-gel complex catalyst
925-52-0
929-20-4
formation of, in dimerization of butadiene, cobalt-gel complex
catalyst for
97-93-8, uses and miscellaneous
initiator, for dimerization of butadiene in presence of cobalt-gel
complex

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110:64520
Polymeric Immobilized Metal Complex Catalysts (Polimernye
Immobilizirovannye Metallokompleksnye Katalizatory).
Pomogailo, A. D. (USSR). (Nauka: Moscow, USSR), 303 pp. rub
4.20. (Russian) 1988. DOCUMENT TYPE: Book CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 34
Abstract Unavailable

Keywords

book polymeric immobilized metal complex catalyst

Index Entries

Polymers, uses and miscellaneous
catalysts from metal complexes immobilized on
Coordination compounds
catalysts, immobilized on polymers
Catalysts and Catalysis
metal complexes immobilized on polymers

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109:177540
Polymeric Immobilized Metal Complex Catalysts (Polimernye
Immobilizirovannye Metallokompleksnye Katalizatory).
Pomogailo, A. D. (USSR). (Nauka: Moscow, USSR), 303 pp. rub
4.20. (Russian) 1988. DOCUMENT TYPE: Book CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Abstract Unavailable

Keywords

book polymeric immobilized metal complex catalyst

Index Entries

Coordination compounds
catalysts, immobilized by polymers
Polymers, uses and miscellaneous
metal complex catalysts immobilized by
Catalysts and Catalysis
metal complexes immobilized by polymers

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108:193373

Synthesis of some new polymeric ligand-anchored rhodium catalysts and their hydroformylation properties.
Sun, Juntan; Weng, Junfan; Li, Hong; He, Binglin (Inst. Polym. Chem., Nankai Univ., Tianjin, Peop. Rep. China). Gaodeng Xuexiao Huaxue Xuebao, 8(7), 653-7 (Chinese) 1987. CODEN: KTHPDM. ISSN: 0251-0790. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 22, 45
Several new types of polymeric ligand and the corresponding Rh complexes were synthesized by using crosslinked polystyrene as the parent support. The catalytic properties of these catalysts for the hydroformylation of diisobutylene and 1-pentene were studied. The loss of Rh from these catalysts was obsd.

Keywords

rhodium polymer ligand anchored catalyst
hydroformylation catalyst rhodium immobilized complex

Index Entries

Hydroformylation catalysts
rhodium polymer-immobilized complexes
9003-53-6
catalysts from rhodium complexes and crosslinked, for hydroformylation
7440-16-6, polymer-immobilized complexes
hydroformylation catalysts, prepn. of
109-67-1
25167-70-8
hydroformylation of, on rhodium polymer-immobilized catalyst

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108:119801

Ultrafine gold particles immobilized by coprecipitation with metal oxide - their fine structures and applications to combustion catalysts and gas sensors.
Haruta, Masatake (Gov. Ind. Res. Inst. Osaka, Ikeda 563, Japan). Hyomen Kagaku, 8(5), 407-14 (Japanese) 1987. CODEN: HYKAET. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Au particles <10 nm in diam., immobilized with α -Fe₂O₃, Co₃O₄, or NiO, were prep'd. by calcining in air at 400°. The coppts. were obtained from an aq. soln. of HAuCl₄ and the nitrate of Fe, Co, or Ni. The ultrafine Au particles were hemispherical in shape and were strongly held by the host oxides. In most cases, hemispherical Au crystallites were deposited directing their flat (111) plane toward α -Fe₂O₃ (110), Co₃O₄ (111), and NiO (111). The Au particles with a mean diam. of 4.1 nm immobilized on α -Fe₂O₃ were more electron deficient than evap'd. Au particles of the same size, and much more than the bulk metal. The ultrafine Au particles thus immobilized with 3d transition metal oxides were extremely active for the oxidn. of CO at <0° and appreciably selective for CO sensing.

Keywords

gold particle transition metal oxide catalyst
 iron oxide gold catalyst
 cobalt oxide gold catalyst
 nickel oxide gold catalyst
 carbon monoxide oxidn gold catalyst

Index Entries

Transition metal oxides
 catalysts from gold and, for oxidn. of carbon monoxide or hydrogen,
 effect of particle size on activity of
 Oxidation catalysts
 gold-transition metal oxide, for carbon monoxide and hydrogen,
 effect of particle size on activity of
 Oxidation
 of carbon monoxide or hydrogen, on gold-transition metal oxides
 Particle size
 of gold supported on transition metal oxides, catalytic activity in
 relation to
 1308-06-1
 1309-37-1, uses and miscellaneous
 1313-99-1, uses and miscellaneous
 catalysts from gold and, for oxidn., effect of particle size on activity
 of
 7440-57-5, uses and miscellaneous
 catalysts from transition metal oxides and, for oxidn., effect of
 particle size on activity of
 630-08-0, reactions
 1333-74-0, reactions
 oxidn. of, on gold-transition metal oxide catalysts

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108:38353

Papain-catalyzed peptide synthesis. Control of amidase activity and
 the introduction of unusual amino acids.
 Barbas, Carlos F., III; Wong, Chi Huey (Dep. Chem., Texas A and M
 Univ., College Station, TX 77843, USA). J. Chem. Soc., Chem.
 Commun., (8), 533-4 (English) 1987. CODEN: JCCCAT. ISSN:
 0022-4936. DOCUMENT TYPE: Journal CA Section: 34 (Amino
 Acids, Peptides, and Proteins) Section cross-reference(s): 7
 Papain catalyzed the coupling of Z-Gly-OEt (Z = PhCH₂O₂C) with
 H-X-OMe [X = D-Ala, D-Leu, D-Phe, D-Val, NH(CH₂)₅CO] to give
 Z-Gly-X-OMe in 55-92% yields. Papain also catalyzed the coupling of
 Z-Phe-OEt with glycinal di-Me acetal to give 73% Z-Phe-glycinal di-Me
 acetal. Immobilized papain catalyzed the coupling of
 Z-Asp(OCH₂Ph)-OCH₂Ph with H-D-Ala-OCHMe₂ to give 86%
 Z-Asp(OCH₂Ph)-D-Ala-OCHMe₂.

Keywords

papain catalyzed peptide synthesis

Index Entries

Peptides, preparation
 prepn. of, by papain-catalyzed coupling reactions
 9001-73-4
 9001-73-4, immobilized
 catalyst, for peptide coupling reactions
 2780-89-4
 21685-47-2

21685-51-8
 21705-13-5
 22483-09-6
 23032-21-5
 79487-89-1
 peptide coupling of, papain catalyst for
 35909-92-3
 peptide coupling of, with glycinal di-Me acetal, papain catalyst for
 5241-60-1
 peptide coupling of, with D-alanine ester, papain catalyst for
 1145-81-9
 peptide coupling of, D-amino acid esters, papain catalyst for
 39613-94-0
 prepn. of
 24955-56-4
 28426-50-8
 39613-93-9
 73538-53-1
 102579-45-3
 112157-46-7
 112157-47-8
 112157-48-9
 prepn. of, by papain-catalyzed coupling reaction

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107:218019
 Phosphinites of carbohydrates as chiral ligands for asymmetric
 synthesis catalyzed by complexes. Part III. Immobilization of
 cationic rhodium(I) chelates of phenyl
 4,6-O-(R)-benzylidene-2,3-O-bis(diphenylphosphino)-b-D-glucopyra-
 noside on cation exchangers for hydrogenation of dehydroamino
 acids.
 Selke, R. (Cent. Inst. Org. Chem., Ger. Acad. Sci., Rostock DDR-2500,
 Ger. Dem. Rep.). J. Mol. Catal., 37(2-3), 227-34 (English) 1986.
 CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE: Journal
 CA Section: 34 (Amino Acids, Peptides, and Proteins) Section
 cross-reference(s): 29, 33

A cationic rhodium(I) chelate of Ph
 4,6-O-(R)-benzylidene-2,3-O-bis(diphenylphosphino)-b-D-glucopyranosi-
 de was immobilized on a com. org. cation exchanger in the H⁺-form.
 This supported catalyst showed a const. high enantioselectivity (94.2 ±
 0.5% e.e.) for N-acyl amino (S)-amino acid ester in the hydrogenation
 of dehydroamino acids I (R = H, Ph). This e.e. is ca. 3% more than the
 corresponding homogeneous catalyst. The activity varies with the size
 of the substrate and competition expts. indicate the supported catalyst
 acts truly heterogeneously. Recycling of the catalyst is possible.
 Leaching effect are low and are not the reason for the obsd. stepwise
 deactivation.

Keywords

phosphine glucopyranoside rhodium catalyst hydrogenation
 asym hydrogenation dehydroamino acid
 stereochem hydrogenation dehydroamino acid
 immobilization phosphine glucopyranoside rhodium

Index Entries

Stereochemistry
 of hydrogenation of dehydroamino acids in presence of
 immobilized rhodium
 bis(diphenylphosphino)glucopyranoside complex
 Amino acids, reactions

dehydro, asym. hydrogenation of, immobilized rhodium
bis(diphenylphosphino)glucopyranoside complex as
catalysts for

Hydrogenation catalysts

stereoselective, immobilized rhodium

bis(diphenylphosphino)glucopyranoside complex, for
dehydroamino acids

35356-70-8

60676-51-9

76313-29-6

asym. hydrogenation of, immobilized rhodium

bis(diphenylphosphino)glucopyranoside complex as
catalysts for

109143-86-4, immobilized

catalysts, for asym. hydrogenation of dehydroamino acids

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107:205965

Oxidation of phosphine by oxygen catalyzed by copper chloride
complexes supported in silica gel.

Rakitskaya, T. L.; Abramova, N. N.; Poklad, N. S.; Red'ko, T. D.
(Odess. Gos. Univ., Odessa, USSR). Kinet. Katal., 28(4), 872-5

(Russian) 1987. CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT

TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and
Inorganic Reaction Mechanisms)

Kinetic and potentiometric studies showed that max. catalytic activity is
assocd. with the complexes CuCl_3 (aq.) or CuCl_4^{2-} (aq.) supported on
silica gel. The rate limiting step is the redn. of the immobilized Cu(II)
complex in which PH_3 has replaced a H_2O mol.

Keywords

oxidn phosphine copper chloro complex
catalyst copper silica phosphine oxidn

Index Entries

Oxidation catalysts

copper chloro complexes, immobilized on silica gel for phosphine
in soln.

Kinetics of oxidation

of phosphine, in soln. catalyzed by immobilized copper chloro
complexes on silica gel

7440-50-8, chloro complexes

catalyst, immobilized on silica gel for oxidn. of phosphine in soln.
7803-51-2

oxidn. of, in soln. catalyzed by immobilized copper chloro
complexes on silica gel

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107:154800

Synthetic polymers in design of metal-complex catalytic systems.

Kabanov, V. A.; Smetanyuk, V. I. (Inst. Petrochem. Synth., Moscow,
USSR). Homogeneous Heterog. Catal., Proc. Int. Symp. Relat.

Homogeneous Heterog. Catal., 5th, 301-25. Edited by: Ermakov, Yu. I.;
Likholobov, V. A. VNU Sci. Press: Utrecht, Neth. (English) 1986.

CODEN: 56DTA9. DOCUMENT TYPE: Conference CA Section: 35

(Chemistry of Synthetic High Polymers) Section cross-reference(s): 67

General principles of design, morphol., and methods of synthesis of the
gel-immobilized catalytic systems were considered. Basic properties
and peculiarities of the behavior of these catalysts related to their sp.
mosaic structure were discussed using catalytic reactions of olefin
dimerization and ethylene polymn. as examples.

Keywords

gel immobilized catalyst polymn dimerization
ethylene polymn catalyst polymer support
olefin dimerization catalyst polymer support

Index Entries

Polymer-supported reagents
catalysts
Alkenes, polymers
dimers, prepn. of, polymer-supported catalysts for
Polymer morphology
of gel-immobilized catalyst systems
Dimers
of olefins, prepn. of, polymer-supported catalysts for
Dimerization catalysts
Polymerization catalysts
polymer-supported
9002-88-4
prepn. of, polymer-supported catalysts for

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107:116558

A biomimetic reactive polymer: anion exchange resins modified with metal-tetrakis(sulfophenyl)porphines and their catalase-like activity. Saito, Yutaka; Mifune, Masaki; Odo, Junichi; Tanaka, Yoshimasa; Chikuma, Masahiko; Tanaka, Hisashi (Fac. Pharm. Sci., Okayama Univ., Okayama 700, Japan). React. Polym., Ion Exch., Sorbents, 4(3), 243-5 (English) 1986. CODEN: RPISDH. ISSN: 0167-6989.

DOCUMENT TYPE: Journal CA Section: 38 (Plastics Fabrication and Uses)

Anion exchanger Amberlite IRA 900 treated with Mn- or Co-tetrakis(sulfophenyl)porphine completely decompd. H₂O₂ upon incubation for 20 min, and the decompn. rate increased as the amt. of resin increased. The decompn. rate decreased with repeated use, but considerable catalytic activity was present even after 10 cycles. Resin contg. unsubstituted or Cu-substituted porphines had very little catalytic activity. The metal-substituted porphines had catalytic activity only when immobilized on the resin.

Keywords

anion exchanger metal porphine catalyst
manganese porphine immobilized decompn catalyst
cobalt porphine immobilized decompn catalyst
hydrogen peroxide decompn catalyst

Index Entries

Polymer-supported reagents
anion exchanger-metal-substituted porphine reaction products, catalysts, for decompn. of hydrogen peroxide
Degradation catalysts
anion exchanger-metal-substituted porphines, for hydrogen peroxide
Anion exchangers
reaction products with metal-substituted porphine, catalysts, for decompn. of hydrogen peroxide
9050-97-9, reaction products with metal-substituted porphines
72282-44-1, reaction products with anion exchange resins
73215-30-2, reaction products with anion exchange resins
catalysts, for decompn. of hydrogen peroxide

7722-84-1, reactions
decompn. of, catalysts for, metal-substituted porphine-anion
exchange resin reactions products as

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107:77125

Catalysis of cyclohexene liquid-phase oxidation by mixed-metal
complexes of transition metals immobilized on silica.

Berentsveig, V. V.; Chan Bic Nga; Rudenko, A. P. (USSR). Vestn.
Mosk. Univ., Ser. 2: Khim., 27(6), 583-7 (Russian) 1986. CODEN:
VMUKA5. ISSN: 0579-9384. DOCUMENT TYPE: Journal CA

Section: 22 (Physical Organic Chemistry) Section cross-reference(s):
67

The title catalysts were composed of Cr-Co, Cr-Mn, and Co-Mn
complexes immobilized on silica. The first two showed a pos.
synergistic effect, and the basis of this was discussed.

Keywords

oxidn cyclohexene mixed metal complex
chromium mixed complex oxidn cyclohexene
cobalt mixed complex oxidn cyclohexene
manganese mixed complex oxidn cyclohexene
silica attached metal complex catalyst

Index Entries

Kinetics of oxidation
of cyclohexene with mixed transition metal complex catalysts
immobilized on silica
Oxidation catalysts
transition metal mixed complexes immobilized on silica, for
cyclohexene
7439-96-5, uses and miscellaneous
7440-47-3, uses and miscellaneous
7440-48-4, uses and miscellaneous
catalysts contg., immobilized on silica, for oxidn. of cyclohexene
110-83-8, reactions
oxidn. of, with mixed transition metal complex catalysts
immobilized on silica

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106:202534

Preparation and physicochemical properties of oxygenated complexes
of cobalt fixed to disperse silica.

Bratushko, Yu. I.; Yakubovich, T. N.; Yatsimirskii, K. B. (USSR). Probl.
Sovrem. Biorgan. Khimii. Mater. Vyezd. Ses., Novosibirsk, 26-28
Marta, 1984, Novosibirsk, 108-16 From: Ref. Zh., Khim. 1987, Abstr.
No. 1V92(Russian) 1986. DOCUMENT TYPE: Journal CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

cobalt oxygenated complex silica immobilized
catalyst silica surface complex cobalt

Index Entries

Catalysts and Catalysis
cobalt oxygenated complexes immobilized on silica dispersion
Oxygenation
of cobalt complexes, immobilized on disperse silica

111-40-0, cobalt complexes, oxygenated
catalysts, immobilized on disperse silica
51-45-6, cobalt complexes, oxygenated
66-71-7, cobalt complexes, oxygenated
71-00-1, cobalt complexes, oxygenated
7440-48-4, oxygenated complexes
catalysts, immobilized, on disperse silica

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106:191792

Immobilized bromoperoxidase of *Corallina pilulifera* as a multifunctional halogenating biocatalyst.
Itoh, Nobuya; Cheng, Li Yao; Izumi, Yoshikazu; Yamada, Hideaki (Fac. Agric., Kyoto Univ., Kyoto 606, Japan). *J. Biotechnol.*, 5(1), 29-38 (English) 1987. CODEN: JBITD4. DOCUMENT TYPE: Journal CA
Section: 7 (Enzymes) Section cross-reference(s): 9
The partially purified bromoperoxidase of *C. pilulifera* was immobilized on the following matrixes: Cellulofine (covalent binding), DEAE-Cellulofine (ionic binding), or alkylsilane-treated Controlled-Pore Glass (phys. adsorption), and entrapped in the soft gels using photocrosslinkable resin prepolymer (ENT-2000), polyurethane prepolymer (PU-6), or k-carrageenan. These different forms of immobilized bromoperoxidase were tested for the bromination reactions of monochlorodimedone and uracil. The immobilization techniques using DEAE-Cellulofine and ENT-2000 were suitable for the bromoperoxidase reaction. The immobilized enzyme on DEAE-Cellulofine showed the highest activity and a half-life of 45 days when it was used for the conversion of uracil to 5-bromouracil.

Keywords

bromoperoxidase immobilization halogenation catalyst *Corallina*

Index Entries

Corallina pilulifera
bromoperoxidase of, immobilization of
Immobilization, biochemical
of bromoperoxidase
Glass, oxide
porous, bromoperoxidase immobilization on alkylsilane-treated
Urethane polymers, compounds
reaction products, with bromoperoxidase, prepn. and activity of
2943-75-1
18536-91-9
glass treatment with, for bromoperoxidase immobilization
66-22-8, reactions
halogenation of, by bromoperoxidase immobilized deriv.
69279-19-2
immobilization of, of *Corallina pilulifera*, on DEAE-Cellulofine and ENT-2000, as halogenation catalyst
11114-20-8, reaction products with bromoperoxidase
65221-92-3, reaction products with bromoperoxidase
prepn. and activity of
93195-72-3, reaction products with bromoperoxidase
prepn. and use as halogenation catalyst
7298-89-7
reaction of, with bromoperoxidase immobilized deriv.

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106:90948

Production of silicon dioxide-supported osmium catalysts from dodecacarbonyltriosmium ($\text{Os}_3(\text{CO})_{12}$). Study by IR, EPR, and

x-ray photoelectron spectroscopy.

Chakrabarty, D. K.; Desai, Ajay A.; Vasumathy, V. (USSR). 5
Mezhdunar. Simp. po Svyazi Mezhdru Gomogen. i Geterogen. Katal.,
Novosibirsk 15-19 Iyulya, 1986, Dokl., Novosibirsk, 3(Ch 2), 119-28
From: Ref. Zh., Khim. 1986, Abstr. No. 22B4261(Russian) 1986.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

osmium catalyst immobilized carbonyl cluster

Index Entries

Catalysts and Catalysis
osmium immobilized carbonyl complex, on silica, characterization
of
15696-40-9
catalyst precursor, on silica
7440-04-2, uses and miscellaneous
catalyst, immobilized cluster complex on silica, characterization
of

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106:90915

Structural analogs and mutual transformations between
microcrystallites of metals and organometallic clusters.
Gallezot, P. (USSR). 5 Mezhdunar. Simp. po Svyazi Mezhdru
Gomogen. i Geterogen. Katal., Novosibirsk 15-19 Iyulya, 1986, Dokl.,
Novosibirsk, 3(Ch 2), 3-23 From: Ref. Zh., Khim. 1986, Abstr. No.
22B4262(Russian) 1986. DOCUMENT TYPE: Journal; General
Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic
Reaction Mechanisms)
Title only translated.

Keywords

review metal cluster structure analog
organometallic cluster immobilized catalyst review

Index Entries

Organometallic compounds
catalyst precursors
Catalysts and Catalysis
immobilized metal cluster complexes
Cluster compounds, coordinative
surface immobilized, catalyst

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106:39139

Synthesis and catalytic properties of metal-containing macroligands
immobilized on inorganic supports.
Mkrtychan, V. R.; Lunin, A. F.; Farafonov, V. V.; Karakhanov, R. A.;
Lapidus, A. L. (USSR). 5 Mezhdunar. Simp. po Svyazi mezhdru
Gomogen. i Geterogen. Katal., Novosibirsk, 15-19 Iyulya, 1986. Dokl.,
Novosibirsk, 2(Ch 2), 45-57 From: Ref. Zh., Khim. 1986, Abstr. No.
21B4276(Russian) 1986. DOCUMENT TYPE: Journal CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

catalyst macroligand metal complex immobilized

Index Entries

Carbonylation catalysts
 Catalysts and Catalysis
 Hydrogenation catalysts
 Oxidation catalysts
 metal macroligand complexes, immobilized on inorg. supports
 Transition metals, compounds
 complexes, macroligand, catalysts, immobilized on inorg.
 supports
 7439-89-6, macroligand complexes
 7440-05-3, macroligand complexes
 7440-47-3, macroligand complexes
 7440-50-8, macroligand complexes
 7440-62-2, macroligand complexes
 catalysts, immobilized on inorg. supports

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115:36367

Preparation of oxidation catalysts by immobilization and isolation of metal complexes into monolayer matrix on silica surface.
 Miki, Keiji; Sato, Yoshiki (Natl. Res. Inst. Pollut. Resourc., Tsukuba 305, Japan). Chem. Lett., (5), 813-16 (English) 1991. CODEN: CMLTAG.
 ISSN: 0366-7022. DOCUMENT TYPE: Journal CA Section: 67
 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
 Section cross-reference(s): 22
 Immobilization and isolation of Co-pyridine complexes in the fence of monolayer matrix on a SiO₂ surface provided active catalysts for oxidn. of 1,2,3,4-tetrahydronaphthalene.

Keywords

cobalt pyridine complex immobilized silica catalyst
 hydronaphthalene oxidn supported cobalt pyridine complex

Index Entries

Oxidation catalysts
 cobalt pyridine complexes immobilized on silica, for
 tetrahydronaphthalene, prepn. of
 110-86-1, cobalt complexes
 7440-48-4, pyridine complexes
 catalysts from silica-immobilized, for oxidn. of
 tetrahydronaphthalene, prepn. of
 18147-81-4
 modification of silica surface by, catalytic activity of immobilized
 cobalt-pyridine complexes in relation to

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114:229569

Synthesis and catalytic activity of polymer matrix-immobilized palladium complexes.
 Sul'man, E. M.; Bronshtein, L. M.; Ankudinova, T. V.; Mirzoeva, E. Sh.; Valetskii, P. M.; Vinogradova, S. V. (Kalinin. Politekh. Inst., Kalinin, USSR). Khim.-Farm. Zh., 25(2), 61-3 (Russian) 1991. CODEN: KHFZAN. ISSN: 0023-1134. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 23, 39, 45, 67
 p-Allyl and p-olefin complexes were obtained by ligand exchange reaction between bis(acetonitrile)-PdCl₂ and polymer matrixes, such as

polybutadiene or block butadiene-styrene rubber. The compn. of the complex depended on the solvent type used in the reaction. The catalytic activity of the complexes were studied in the hydrogenation of acetylenic alcs. The activity and selectivity of the process depended on the type of the complex.

Keywords

palladium complex polybutadiene hydrogenation catalyst
SBR palladium complex hydrogenation catalyst
acetylenic alc hydrogenation catalyst

Index Entries

Solvent effect

on prepn. of polymer matrix-immobilized palladium complex
hydrogenation catalysts

Hydrogenation catalysts

palladium complexes with polybutadiene and block SBR, for
acetylenic alcs., prepn. and structure and activity of
Alcohols, reactions

acetylenic, hydrogenation of, over palladium complexes with
polybutadiene and block SBR

Rubber, butadiene-styrene, compounds

block, palladium complexes, catalysts, for hydrogenation of
acetylenic alcs., prepn. and structure and activity of

7440-05-3, complexes with polybutadiene and block SBR

9003-17-2, complexes with palladium

catalysts, for hydrogenation of acetylenic alcs., prepn. and structure
and activity of

106107-54-4

rubber, block, palladium complexes, catalysts, for hydrogenation of
acetylenic alcs., prepn. and structure and activity of

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114:162405

Design of a continuous reactor for immobilized biocatalysts.

Vos, H. J. (Tech. Hogesch. Delft, Delft, Neth.). Report, Order No.
PB90-210337, 148 pp. Avail. NTIS From: Gov. Rep. Announce. Index
(U. S.) 1990, 90(14), Abstr. No. 036,953 (English) 1990. DOCUMENT
TYPE: Report CA Section: 16 (Fermentation and Bioindustrial
Chemistry)

One of the methods of avoiding wash-out of a nongrowing biocatalyst
from a continuously operated reactor is immobilization. The biocatalyst
is cross-linked, attached to a carrier, or entrapped in a gel. For
industrial processes, fixed bed reactors are almost exclusively used. In
addn. to the search for efficient biocatalysts, the development of new
reactor types that take specific characteristics of biocatalysts, such as
deactivation, into account might contribute to economic feasibility and
facilitate the introduction of new processes with immobilized
biocatalysts. In this context, the multistage fluidized bed bioreactor was
studied. Fresh biocatalyst is fed into the upper compartment of the
reactor. The holes in the plates that sep. the compartments are larger
than the biocatalyst particles. This allows biocatalyst transport by
periodic inversion of the liq. flow.

Keywords

bioreactor design immobilized catalyst

Index Entries

Reactors

biocatalytic, design of, for immobilized biocatalysts

Enzymes
immobilized, reactor design for

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114:141586

Modeling and analysis of immobilized cell catalysts and reactors.
Sayles, Gregory Damian (North Carolina State Univ., Raleigh, NC,
USA). 279 pp. Avail. Univ. Microfilms Int., Order No. DA9023407
From: Diss. Abstr. Int. B 1991, 51(7), 3483 (English) 1990.
DOCUMENT TYPE: Dissertation CA Section: 16 (Fermentation and
Bioindustrial Chemistry)
Abstract Unavailable

Keywords

model immobilized cell catalyst reactor

Index Entries

Fermentation apparatus
immobilized cell-contg., modeling and anal. of
Process simulation, biological
of immobilized cell catalysts and reactors

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114:104724

Dimerization of ethylene on new gel-immobilized catalytic systems.
Popov, V. G.; Vashchurin, A. S.; Klebanova, F. D. (USSR). Sb. Nauch.
Tr. VNII Organ. Sintez, (27), 17-28 From: Ref. Zh., Khim. 1990, Abstr.
No. 20N10(Russian) 1990. DOCUMENT TYPE: Journal CA Section:
45 (Industrial Organic Chemicals, Leather, Fats, and Waxes) Section
cross-reference(s): 35
Title only translated.

Keywords

ethylene dimerization catalyst gel immobilized

Index Entries

Dimerization catalysts
gel-immobilized, for ethylene
74-85-1, reactions
dimerization of, on gel-immobilized catalysts

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114:102755

Polyethylene glycol-modified papain catalyzed oligopeptide synthesis
from the esters of L-aspartic and L-glutamic acids in benzene.
Uemura, Takashi; Fujimori, Manami; Ito, Ho Hi; Ikeda, Sakio; Aso,
Keiichi (Dep. Appl. Biol. Sci., Sci. Univ. Tokyo, Noda 278, Japan).
Agric. Biol. Chem., 54(9), 2277-81 (English) 1990. CODEN: ABCHA6.
ISSN: 0002-1369. DOCUMENT TYPE: Journal CA Section: 34
(Amino Acids, Peptides, and Proteins) Section cross-reference(s): 9
Comparative studies were made of the polymn. of L-aspartic and
L-glutamic acid dialkyl esters using polyethylene glycol-modified papain
as a catalyst in phosphate buffer (pH 7.5) and in benzene. Changes in
the substrate specificity of papain and in the compn. of oligomerized
products were obsd. In the buffer, the di-Et and di-Pr esters of
L-glutamic acid were sufficiently converted to high mol. wt. oligomers
with the accumulation of dimer and trimer, but L-aspartic acid esters
were very poor substrates. In benzene, L-aspartic acid esters became

more reactive than L-glutamic acid esters. In particular, from L-aspartic acid di-Me ester, the products, which were mainly composed of heptamer to decamer, were obtained in 90% yield. The reaction in benzene required desalted substrates and a small amt. of water to proceed extensively.

Keywords

oligomerization aspartate glutamate immobilized papain

Index Entries

Polymerization

oligomerization, of aspartic and glutamic acid esters with immobilized papain

Polymerization catalysts

oligomerization, polyethylene glycol-modified papain, for aspartic and glutamic acid esters

9001-73-4

immobilized on polyethylene glycol, as catalyst for oligomerization of aspartic and glutamic acid esters

6384-18-5

6525-53-7

13552-87-9

16450-41-2

45172-24-5

54817-41-3

oligomerization of, immobilized papain catalysts for

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114:101295

Synthesis and reaction of a silica-supported catalyst with ammonium groups. Immobilized ammonium groups on silica.

Kurusu, Yasuhiko (Fac. Sci. Technol., Sophia Univ., Tokyo 102, Japan).

J. Macromol. Sci., Chem., A27(9-11), 1389-94 (English) 1990.

CODEN: JMCHBD. ISSN: 0022-233X. DOCUMENT TYPE: Journal

CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

The immobilization of lipophilic quaternary ammonium salts on large areas of the surface of silica has been accomplished. The modified silica served as a catalyst for the nucleophilic substitution of benzylic halides by cyanide.

Keywords

ammonium silica catalyst substitution halide
benzylic halide substitution cyanide catalyst

Index Entries

Substitution reaction catalysts

nucleophilic, ammonium compds. immobilized on silica, for benzylic halides with selenide

7631-86-9, ammonium-contg. deriv.

catalysts, for substitution reaction of benzylic halides with cyanide

3333-16-2

prepn. of

1760-24-3

2530-87-2

reaction of, with activated silica

64030-44-0

70371-56-1

reaction of, with chloropropylsilylated silica

16695-22-0

reaction of, with tosylated [(aminoethyl)amino]propylated silica
100-44-7, reactions
585-71-7
672-65-1
substitution reaction of, with cyanide, ammonium-contg. silica
catalysts for

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114:24736

Polymers containing metal chelate units. II. Synthesis, structure and use of polymer-supported heterometallic complexes.
Uflyand, I. E.; Starikov, A. G.; Golubeva, N. D.; Pomogailo, A. D. (Dep. Chem., State Pedagog. Inst., Rostov-on-Don 344082, USSR). React. Polym., 13(1-2), 139-44 (English) 1990. CODEN: REPLEN. ISSN: 0923-1137. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 67
Heterometallic immobilized complexes with controlled distribution of metals were synthesized by the interaction of tricyclic enaminoketonates of Cu(II), Ni(II), and Co(II) with Ti(IV) and V(IV) chlorides immobilized on a polyethylene surface. The data from magnetochem., IR and electronic spectroscopy indicate that complex formation proceeds by ligand recoordination accompanied by the transition of bivalent metals from low (planar square) to high spin state (tetrahedron or octahedron). The catalytic properties of the heterometallic complexes in the prepn. of linear low-d. polyethylene were studied.

Keywords

polyethylene supported heterometallic complex
cyclic enaminoketonate metal immobilized polyethylene
catalyst ethylene polymn
metal chelate polymer structure property

Index Entries

Polymerization catalysts
metal chelate-contg. polyethylenes as, for ethylene with butene, prepn. and structure and activity mechanism of
Polymer-supported reagents
metal chelate-contg. polyethylenes as, prepn. and structure and catalytic activity of
25087-34-7
linear low-d., prepn. of, catalysts for, metal chelate-contg. polyethylenes as, activity mechanism of
7440-32-6, complexes with allyl alc.-grafted polyethylene, reaction products with transition metal tricyclic enaminoketonates
7440-62-2, complexes with allyl alc.-grafted polyethylene, reaction products with transition metal tricyclic enaminoketonates
15749-21-0, reaction products with titanium or vanadium chloride-immobilized allyl alc.-grafted polyethylene
16050-09-2, reaction products with titanium or vanadium chloride-immobilized allyl alc.-grafted polyethylene
23354-69-0, reaction products with titanium or vanadium chloride-immobilized allyl alc.-grafted polyethylene
110339-70-3, complexes with titanium or vanadium chlorides, reaction products with transition metal tricyclic enaminoketonates
prepn. and structure and catalytic activity of

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113:97123

Enantioselective addition of dialkylzincs to aldehydes using heterogeneous chiral catalysts immobilized on alumina and silica

gel.

Soai, Kenso; Watanabe, Masami; Yamamoto, Atsuhiko (Fac. Sci., Sci. Univ. Tokyo, Tokyo 162, Japan). J. Org. Chem., 55(16), 4832-5 (English) 1990. CODEN: JOCEAH. ISSN: 0022-3263. DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

The first example of the use of alumina and silica gel as insol. supports for the chiral catalyst in the enantioselective addn. of dialkylzincs to aldehydes is described. Chiral N-alkylnorephedrine were immobilized on (3-chloropropyl)silyl-functionalized alumina or silica gel. Ephedrine was also immobilized on silica gel coated with chloromethylated polystyrene. Using these chiral catalysts, optically active secondary alcs. were obtained in 24-59% enantiomeric excess. The catalyst immobilized on silica gel coated with polystyrene was recycled without the loss of its enantioselectivity.

Keywords

addn catalyst alumina silica gel support
aldehyde addn catalyst dialkylzinc

Index Entries

Addition reaction catalysts

N-alkylnorephedrine and ephedrine, for enantioselective addn. of dialkylzinc to aldehydes

557-20-0

628-91-1

1119-90-0

addn. by, of benzaldehyde, catalysts for

66-99-9

100-52-7, reactions

104-87-0

addn. reaction of, with dialkylzinc, catalysts for

124-19-6

addn. reaction of, with diethylzinc, catalysts for

1344-28-1, uses and miscellaneous

as chiral catalyst support, for enantioselective addn. of dialkylzinc to aldehydes

299-42-3, alumina or silica gel supported

catalyst, for enantioselective addn. of dialkylzinc to aldehydes

37577-32-5, silica-supported

126188-18-9, silica-supported

catalysts, for addn. reaction of benzaldehyde with dialkylzinc

1565-74-8

19641-53-3

22144-60-1

33652-83-4

107494-37-1

112576-12-2

112777-65-8

prepn. of

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113:58645

Crown ethers immobilized on a 2-vinylpyridine-styrene copolymer as catalysts for O-alkylation.

Ivanova, L. P.; Zemchonok, Yu. B.; Zorin, V. V.; Zlotskii, S. S.; Rakhmankulov, D. L. (Ufim. Neft. Inst., Ufa, USSR). Zh. Prikl. Khim. (Leningrad), 63(1), 226-8 (Russian) 1990. CODEN: ZPKHAB. ISSN: 0044-4618. DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds) Section

cross-reference(s): 67

Protonated styrene-2-vinylpyridine copolymer reacted with radicals

derived from 18-crown-6 and dicyclohexano-18-crown-6 to give immobilized crown ethers, which catalyzed O-alkylation of PhOH and a-naphthol with RI (R = Et, Pr, Bu, C₅H₁₁, C₉H₁₉) to give 97% ethers.

Keywords

crown ether immobilized alkylation catalyst
alkylation phenol naphthol catalyst
polymer bound crown alkylation catalyst

Index Entries

Alkyl iodides
alkylation by, of phenol and naphthol, catalysts for
Alkylation catalysts
polymer-bound crown ethers, for phenol and naphthol
Crown compounds
ethers, polymer-bound, catalysts, for alkylation of phenol and naphthol
542-69-8
4282-42-2
alkylation by, of naphthol, catalysts for
75-03-6
107-08-4
628-17-1
alkylation by, of phenol and naphthol, catalysts for
90-15-3
108-95-2, reactions
alkylation of, with alkyl iodide, polymer-bound crown ether catalysts for
103-73-1
622-85-5
2050-04-6
5328-01-8
20009-26-1
20900-19-0
70617-43-5
prepn. of
128324-52-7, polymer-bound
128428-78-4, polymer-bound
prepn. of, as catalysts for alkylation of phenol and naphthol
16069-36-6
17455-13-9
reaction of radicals from, with styrene-vinylpyridine copolymer
24980-54-9
reaction of, with crown ether-derived radicals

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113:4736

Stirring mechanism for bioreactor with immobilized bio-catalyst.
Oishi, Tsutomu (Japan). Jpn. Kokai Tokkyo Koho JP 02042974 A2 13
Feb 1990 Heisei, 3 pp. (Japan) CODEN: JKXXAF. CLASS: ICM:
C12M001-40. APPLICATION: JP 88-192485 1 Aug 1988.
DOCUMENT TYPE: Patent CA Section: 16 (Fermentation and
Bioindustrial Chemistry)
A pump was used to rotate a cylindrical support for immobilized cells
(or enzymes) in a bioreactor. The cylindrical support has a vertical axis.
Culture medium and air can be pumped from side openings into the
bioreactor and exit gas or liq. can pass through a top opening.

Keywords

bioreactor stirring immobilized biocatalyst

Index Entries

Fermentation apparatus
 stirring mechanism for immobilized biocatalyst in
 Reactors
 biocatalytic, stirring mechanism for immobilized biocatalyst in

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112:217485

First stereoselective synthesis of D-amino acid N-alkyl amide catalyzed by D-aminopeptidase.

Kato, Yasuo; Asano, Yasuhisa; Nakazawa, Akiko; Kondo, Kiyosi
 (Sagami Chem. Res. Cent., Kanagawa 229, Japan). Tetrahedron,
 45(18), 5743-54 (English) 1989. CODEN: TETRAB. ISSN:

0040-4020. DOCUMENT TYPE: Journal CA Section: 34 (Amino
 Acids, Peptides, and Proteins) Section cross-reference(s): 9

The first stereoselective synthesis of D-amino acid N-alkylamides was achieved by the use of D-aminopeptidase from Ochrobactrum anthropi.

The enzyme immobilized by urethane prepolymer PU-6 catalyzed aminolysis reaction of racemic amino acid esters in org. solvents.

Keywords

alanine ester stereoselective amidation aminopeptidase
 polymer immobilized aminopeptidase amidation catalyst
 resolu alanine ester aminopeptidase

Index Entries

Resolution

of racemic alanine esters by amidation with aminopeptidase

Amidation catalysts

stereoselective, immobilized aminopeptidase, for D-alanine

Amidation

stereoselective, of D-alanine with aminopeptidase

100-46-9, reactions

109-73-9, reactions

5813-64-9

amidation by, of D-alanine in the presence of aminopeptidase

616-24-0

amidation by, of D-amino acids in the presence of aminopeptidase

14316-06-4

amidation of, with amines, aminopeptidase-catalyzed

616-34-2

2280-40-2

15893-47-7

32526-16-2

35320-22-0

74645-03-7

94841-52-8

104714-52-5

amidation of, with aminopentane, aminopeptidase-catalyzed

62-53-3, reactions

124-22-1

attempted amidation by, of D-alanine in the presence of
 aminopeptidase

79-20-9

93-58-3

101-41-7

623-42-7

3410-66-0

4138-35-6

16422-27-8

17720-12-6

21685-17-6
 21685-47-2
 21685-51-8
 21691-49-6
 22032-65-1
 23032-21-5
 24184-43-8
 24461-61-8
 42807-32-9
 43041-12-9
 82679-55-8
 88067-96-3
 107998-45-8
 108258-30-6
 108258-31-7
 119490-22-1
 attempted amidation of, with aminopentane in the presence of
 aminopeptidase
 338-69-2
 formation of, by enzymic hydrolysis of pentane amide
 57534-78-8
 immobilized, as catalyst for stereoselective amidation of
 D-alanine
 113889-94-4
 123089-26-9
 127117-47-9
 127117-48-0
 127117-49-1
 127117-50-4
 prepn. of
 10065-72-2
 prepn. of, by amidation of racemate with D-aminopeptidase
 119337-32-5
 prepn., butoxycarbonylation, and enzymic hydrolysis of
 13515-97-4
 resolu. of, by stereoselective amidation with aminopeptidase

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112:185736
 Bilirubin removal by the pseudoperoxidase activity of free and
 immobilized hemoglobin and hemoglobin co-immobilized with
 glucose oxidase.
 Daka, J. N.; Chang, T. M. S. (Artif. Cells Organs Res. Cent., McGill
 Univ., Montreal, PQ H3G 1Y6, Can.). Biomater., Artif. Cells, Artif.
 Organs, 17(5), 553-62 (English) 1989. CODEN: BACOEZ. ISSN:
 0890-5533. DOCUMENT TYPE: Journal CA Section: 63
 (Pharmaceuticals)
 A process for oxidizing bilirubin is reported. Hb in the presence of an
 oxidizing agent can effectively oxidize bilirubin. Hb can be used either
 in free form or immobilized. Immobilization includes
 microencapsulation, covalent linkage to carriers, intermol. crosslinking
 into polyHb and others. The oxidizing agent can be added in the form
 of a peroxide. However, no external peroxide is required when Hb is
 coimmobilized with glucose oxidase. In this case, the oxidn. reaction
 takes place in the presence of glucose which is normally available in
 the blood stream and the presence of other oxidizing agents becomes
 unnecessary. In cases where bilirubin is conjugated to large proteins
 such as albumin, oxidn. can be accomplished by using Hb either in free
 form, adsorbed or bound on a suitable surface. PolyHb or crosslinked
 Hbs can also be used as oxidn. catalysts in this case.

Keywords

bilirubin removal Hb oxidn

pseudoperoxidase activity Hb bilirubin removal

Index Entries

Hemoglobins

coimmobilized with glucose oxidase or free, for bilirubin removal

Michaelis constant

for bilirubin, with Hb as catalyst

Immobilization, biochemical

of Hb and glucose oxidase, on microcapsules, for bilirubin removal

Oxidation

of bilirubin, by pseudoperoxidase activity of free and immobilized

Hb, in enzymic removal

Hemoglobins

crosslinked, with glutaraldehyde, prepn. of, for bilirubin removal

Capsules

micro-, Hb and glucose oxidase immobilization on, for bilirubin removal

Encapsulation

micro-, of Hb, for bilirubin removal

9001-37-0

Hb coimmobilized with, for bilirubin removal

7722-84-1, biological studies

bilirubin removal by Hb pseudoperoxidase activity in presence of

50-99-7, biological studies

bilirubin removal by pseudoperoxidase activity of Hb in presence of

635-65-4, biological studies

removal of, pseudoperoxidase activity of free and immobilized Hb

in

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112:58683

Selective synthesis of 4-hydroxybenzoic acid using an immobilized b-cyclodextrin as catalyst.

Wang, Yuesheng; Jin, Fang; Xia, Shuliang (Dep. Mater. Sci. Eng., Univ. Sci. Technol. China, Hefei, Peop. Rep. China). Shiyou Huagong, 18(6), 378-80 (Chinese) 1989. CODEN: SHHUE8. ISSN: 1000-8144.

DOCUMENT TYPE: Journal CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

The selectivity of crosslinked b-cyclodextrin (I)-epichlorohydrin copolymer catalyst in the selective synthesis of 4-hydroxybenzoic acid from PhOH and CCl₄ could be as high as 100%, compared with 50% for uncrosslinked I. The reaction was carried out at 80° for 15 h. The crosslinked resin catalyst was recoverable and reuseable without decreasing the selectivity and yield.

Keywords

cyclodextrin epichlorohydrin copolymer catalyst

hydroxybenzoic acid selective prepn catalyst

phenol reaction carbon tetrachloride catalyst

Index Entries

Catalysts and Catalysis

b-cyclodextrin and b-cyclodextrin-epichlorohydrin copolymer, for phenol reaction with carbon tetrachloride, selectivity of

25655-42-9

catalysts, crosslinked, for reaction of phenol with carbon

tetrachloride, selectivity of

7585-39-9

catalysts, for reaction of phenol with carbon tetrachloride, selectivity of

99-96-7, preparation

prepn. of, from phenol and carbon tetrachloride, catalysts for,
 b-cyclodextrin and b-cyclodextrin-epichlorohydrin
 copolymer as
 108-95-2, reactions
 reaction of, with carbon tetrachloride, catalysts for, b-cyclodextrin
 and b-cyclodextrin-epichlorohydrin copolymer as, selectivity
 of
 56-23-5, reactions
 reaction of, with phenol, catalysts for, b-cyclodextrin and
 b-cyclodextrin-epichlorohydrin copolymer as, selectivity of

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111:220054

Spectroscopic study of rhodium complexes, immobilized on modified
 silica gel.

Dovganyuk, V. F.; Belyaeva, V. K.; Marov, I. N.; Shpiro, E. S.; Sharf, V.
 Z. (Inst. Org. Khim. im. Zelinskogo, Moscow, USSR). Zh. Neorg. Khim.,
 34(8), 2070-3 (Russian) 1989. CODEN: ZNOKAQ. ISSN: 0044-457X.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
 Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 73, 77

XPS and ESR studies showed that Rh complexes interact with
 aminophosphinyl groups on silica gels to form surface
 coordination-unsatd. compds. which exhibit high reactivity toward O.
 The formation of surface paramagnetic centers was obsd. during
 treatment of immobilized complexes with NaBH₄. A relation was
 established between the structure of active centers and the catalytic
 activity of the complexes.

Keywords

catalyst silica immobilized rhodium complex
 aminophosphinyl silica sorption rhodium complex
 ESR surface complex
 photoelectron spectra surface complex

Index Entries

Silica gel, compounds
 aminophosphinylated, reaction products with rhodium complexes,
 catalysts, spectral study of
 Catalysts and Catalysis
 Hydrogenation catalysts
 rhodium complexes, immobilized on modified silica gel, spectral
 studies of
 7440-16-6, uses and miscellaneous
 catalysts, silica-immobilized, spectral study of
 10049-07-7, reaction products with aminophosphinylated silica gel
 12092-47-6
 catalysts, spectral study of

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110:237574

Properties of 8-hydroxyquinoline immobilized on the silica surface.
 Kotlyar, S. S.; Yanishpol'skii, V. V.; Tertykh, V. A. (Inst. Khim.
 Poverkh., Kiev, USSR). Teor. Eksp. Khim., 25(1), 108-12 (Russian)
 1989. CODEN: TEKHA4. ISSN: 0497-2627. DOCUMENT TYPE:

Journal CA Section: 66 (Surface Chemistry and Colloids) Section
 cross-reference(s): 67

The ionization consts. of benzeneazo-8-hydroxyquinoline (I) grafted on
 silica surface, was detd. by potentiometric titrn. I deprotonates on
 increasing pH. Adsorption of Cu²⁺, Co²⁺, and Ni²⁺ on grafted I was
 studied. The surface complexes of Cu and Co catalyze hydrazine

oxidn. in aq. solns. by mol. O.

Keywords

phenylazohydroxyquinoline grafted silica ionization deprotonation
cobalt phenylazohydroxyquinoline catalyst hydrazine oxidn
copper phenylazohydroxyquinoline catalyst hydrazine oxidn
metal phenylazohydroxyquinoline catalyst hydrazine oxidn

Index Entries

Oxidation catalysts
from cobalt and copper complexes of
phenylazohydroxyquinoline-silica reaction products
Ionization in liquids
of phenylazohydroxyquinoline-silica reaction products
Protonation and Proton transfer reaction
deprotonation, of phenylazohydroxyquinoline-silica reaction
products
7440-02-0, properties
adsorption of, on phenylazohydroxyquinoline-silica reaction products
7440-48-4, properties
7440-50-8, properties
adsorption of, on phenylazohydroxyquinoline-silica reaction
products, oxidn. catalyst for hydrazine from
4312-09-8, reaction products with silica
7631-86-9, reaction products with phenylazohydroxyquinoline
catalytic activity and deprotonation and ionization of
12408-02-5, unspecified
ionization in liquids, of phenylazohydroxyquinoline-silica reaction
products
302-01-2, reactions
oxidn. of, metal complexes of phenylazohydroxyquinoline-silica
reaction products as catalysts for
12408-02-5, unspecified
protonation and Proton transfer reaction, deprotonation, of
phenylazohydroxyquinoline-silica reaction products

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110:231199

Development of an immobilized rhodium catalyst for carbonylation of
benzyl alcohol.
Yamasaki, Kenji; Uchimoto, Tsutomu; Kakuta, Noriyoshi; Ueno, Akifumi
(Dep. Ind. Chem., Suzuka Tech. Coll., Suzuka 510-02, Japan). J. Mol.
Catal., 48(1), 21-3 (English) 1988. CODEN: JMCADS. ISSN:
0304-5102. DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its
Derivatives, and Condensed Benzenoid Compounds)
RhCl₃ immobilized on C, Al₂O₃, SiO₂, MgO, and ZnO was used as a
catalyst for the title carbonylation. With C, selectivity for PhCH₂CO₂H (I)
was 70.6%, with Al₂O₃, 41.3%, and with SiO₂, 49.8%. However, with
MgO and ZnO, the selectivity for I was 0% while the selectivity for
(PhCH₂)₂O was >87%.

Keywords

rhodium catalyst carbonylation benzyl alc
carbon catalyst support carbonylation
phenylacetic acid

Index Entries

Carbonylation
of benzyl alc., selectivity in rhodium-catalyzed
Carbonylation catalysts

rhodium trichloride, for benzyl alc., selectivity in relation to
100-51-6, reactions
carbonylation of, rhodium-catalyzed
10049-07-7
catalyst, for carbonylation of benzyl alc.
102-16-9
103-29-7
103-50-4
108-88-3, preparation
formation of, in rhodium-catalyzed carbonylation of benzyl alc.
103-82-2, preparation
prepn. of, by rhodium-catalyzed carbonylation of benzyl alc.
7440-44-0, uses and miscellaneous
promoter, for carbonylation of benzyl alc., rhodium-catalyzed

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110:173566

Catalytic activity of titanium-porphyrin complexes immobilized in a polymeric gel in dehydration of xylose.
Potapov, G. P.; Krupenskii, V. I.; Alieva, M. I. (Syktyvkar. Gos. Univ., Syktyvkar, USSR). Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol., 30(12), 26-8 (Russian) 1987. CODEN: IVUKAR. ISSN: 0579-2991.
DOCUMENT TYPE: Journal CA Section: 33 (Carbohydrates) Section cross-reference(s): 27
Rate consts., activation energies, and entropy of activation were detd. for the dehydration of xylose catalyzed by Cp_2TiCl_2 ($Cp = h_5$ -cyclopentadienyl)-protoporphyrin IX complex immobilized in a polyarylamide gel in aq. soln. Concns. of xylose and of the furfural product were detd. spectrophotometrically.

Keywords

xylose dehydration catalytic kinetics
titanium protoporphyrin dehydration catalyst xylose
furfural

Index Entries

Kinetics of dehydration
of xylose in presence of titanocene dichloride-protoporphyrin complex
Dehydration catalysts
polymer gel-immobilized titanocene dichloride-protoporphyrin complex, for xylose
1271-19-8
catalyst from protoporphyrin and, for dehydration of xylose
553-12-8
catalyst from titanocene dichloride and, for dehydration of xylose
58-86-6, reactions
dehydration of, in presence of titanocene dichloride-protoporphyrin complex, kinetics of
98-01-1, preparation
formation of, in dehydration of xylose catalyzed by titanocene dichloride-protoporphyrin complex

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110:135762

Immobilized 4-dialkylaminopyridines: supernucleophilic chemical decontamination agents.
Narang, S. C.; Ventura, S. (SRI Int., Menlo Park, CA, USA). Report, ARO-23203.1-CH; Order No. AD-A190999, 21 pp. Avail. NTIS From: Gov. Rep. Announce. Index (U. S.) 1988, 88(15), Abstr. No. 839,301 (English) 1987. DOCUMENT TYPE: Report CA Section: 35

(Chemistry of Synthetic High Polymers)

Supernucleophilic polymers contg. the 4-dialkylaminopyridine moiety were synthesized by different methods, either by modification of polymers or by polymn. of methacrylamides. The resulting polymers show good catalytic activity for hydrolysis of acetate esters. The catalytic activity can be changed readily by modifying the polymer structure.

Keywords

dialkylaminopyridine deriv polymer decontamination agent
catalyst hydrolysis acetate dialkylaminopyridine polymer

Index Entries

Decontamination

agents, polymer-immobilized dialkylamino pyridines as

Hydrolysis

agents, polymer-immobilized dialkylamino pyridines, for acetate esters

Polymer-supported reagents

dialkylamino pyridines, as supernucleophilic chem.

decontamination agents

110-86-1, dialkylamino derivs., polymers

as supernucleophilic chem. decontamination agents and catalysts for acetate hydrolysis

64-19-7, esters

hydrolysis of, catalysts for, polymer-immobilized dialkylamino pyridines as

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110:58920

Polymerization and copolymerization of metal-containing monomers as a means of preparing immobilized catalysts.

Pomogailo, A. D. (Inst. Chem. Phys., Chernogolovka 142432, USSR).

React. Polym., Ion Exch., Sorbents, 9(1), 109-17 (English) 1988.

CODEN: RPISDH. ISSN: 0167-6989. DOCUMENT TYPE: Journal;

General Review CA Section: 38 (Plastics Fabrication and Uses)

Section cross-reference(s): 29

Conditions for prepg. polymer-supported metal complex catalysts by polymn. and copolymn. of metal-contg. monomers (MCM), i.e., compds. with a metal-contg. unit and a multiple bond capable of polymn., are reviewed with 15 refs. Three main types of MCM, their compn. and structure, and peculiarities of their homo- and copolymn. are described.

The main conversions different from polymn. of conventional monomers are highlighted. The structural arrangement of both the metal complexes and the MCM-based polymers are considered, as well as the conversion obsd. upon incorporation in the macrochain. The main directions of application of MCM and MCM-based polymers in catalysis are defined.

Keywords

review metal contg polymer catalyst
polymn metal contg monomer review

Index Entries

Polymer-supported reagents

catalysts, polymn. of metal-contg. monomers for

Catalysts and Catalysis

immobilized, metal-contg. polymers as, prepn. of

Polymerization

of metal-contg. monomers, in prepn. of immobilized catalysts

Polymers, uses and miscellaneous
metal-contg., as immobilized catalysts

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109:231592

Iron(III) chloride immobilized on crosslinked
4-vinylpyridine-poly(ethylene oxide) copolymers as catalyst in the
synthesis of 2-hydroxyethyl methacrylate.
Stamenova, R.; Ivanova, P.; Boeva, R.; Tsvetanov, Kh. (Cent. Lab.
Polym., Bulg. Acad. Sci., Sofia 1040, Bulg.). React. Polym., Ion Exch.,
Sorbents, 9(1), 91-8 (English) 1988. CODEN: RPISDH. ISSN:
0167-6989. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of
Synthetic High Polymers) Section cross-reference(s): 37, 38
Polymer-immobilized metal complexes were prepd. by sorption of
FeCl₃ and chromium compds. on latex particles of crosslinked
4-vinylpyridine-poly(ethylene oxide) graft copolymers. Catalytic activity
and selectivity of these complexes in the esterification reaction of
methacrylic acid with ethylene oxide were studied. They provided high
degrees of conversion (96-100%) with minor formation of byproducts.
On repeated use the catalytic activity slightly decreased.

Keywords

esterification catalyst polymer supported
hydroxyethylation catalyst polymer supported
methacrylate hydroxyethyl
iron catalyst esterification polymer supported

Index Entries

Polymer-supported reagents
catalysts, iron, for esterification of methacrylic acid with ethylene
oxide
Hydroxyethylation catalysts
iron, polymer-supported, for methacrylic acid with ethylene oxide
Polymer morphology
of vinylpyridine-grafted polyethylene glycol, as supports for iron
catalysts for esterification of methacrylic acid with ethylene
oxide
7440-47-3, uses and miscellaneous
catalysts, polymer-supported, contg. iron, for esterification of
methacrylic acid with ethylene oxide
7439-89-6, uses and miscellaneous
catalysts, polymer-supported, for esterification of methacrylic acid
with ethylene oxide
79-41-4, reactions
esterification of, with ethylene oxide, polymer-supported iron
catalysts for
75-21-8, reactions
methacrylate acid esterification with, polymer-supported iron
catalysts for
868-77-9
prepn. of, from methacrylic acid and oxirane, polymer-supported
iron catalysts for
117787-05-0
117787-06-1
supports, for iron catalysts for esterification of methacrylic acid with
ethylene oxide

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109:212711

Liquid-phase oxidation of cyclohexane to dibasic acids with
immobilized cobalt catalyst.

Shen, Hung Chung; Weng, Hung Shan (Dep. Chem. Eng., Natl. Cheng Kung Univ., Tainan 70101, Taiwan). Ind. Eng. Chem. Res., 27(12), 2254-60 (English) 1988. CODEN: IECRED. ISSN: 0888-5885.
DOCUMENT TYPE: Journal CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes) Section cross-reference(s): 35
Liq.-phase oxidn. of cyclohexane (I) to C4-6 dicarboxylic acids was studied in a batch autoclave reactor using HOAc as the solvent and a Co-form weak acid cation exchanger as the catalyst at 85-105° and 5-20 atm. Cyclohexanone (II) was used as the coreactant. The length of the induction period decreased with increasing II/I molar ratio and reaction temp. The O pressure had no significant effect on the induction period at >10 atm. The max. initial oxidn. rate of I occurred at I mole fraction ~0.5, whereas the initial oxidn. rate of II decreased with increasing I/II molar ratio. The fractional yield of dibasic acids (including adipic, glutaric, and succinic acid) was 0.75-0.85, depending on the reaction conditions. The fractional yield of adipic acid was ~0.58-0.70, which was higher than that in II oxidn. alone. At I mole fraction 0.52, the activation energies of I and II were 20.6 ± 1.9 and 15.0 ± 1.5 kcal/mol, resp., during the rapid reaction phase. The oxidn. of I to dibasic acid was via the intermediate II exclusively with only trace amts. of cyclohexanol produced.

Keywords

cyclohexane cyclohexanone oxidn cobalt catalyst
succinic acid prepn cyclohexane oxidn
glutaric acid prepn cyclohexane oxidn
adipic acid prepn cyclohexane oxidn

Index Entries

Oxidation catalysts
cobalt supported on cation exchangers, for liq.-phase oxidn. of cyclohexane and cyclohexanone to dicarboxylic acids
Kinetics of oxidation
of cyclohexane and cyclohexanone to dicarboxylic acids, in liq. phase
Cation exchangers
catalysts, contg. cobalt, for liq.-phase oxidn. of cyclohexane and cyclohexanone to dicarboxylic acids
Carboxylic acids, preparation
di-, C4-6, formation of, by liq.-phase oxidn. of cyclohexane and cyclohexanone in presence of cobalt catalysts
Oxidation
liq.-phase, of cyclohexane and cyclohexanone to dicarboxylic acids, in presence of immobilized cobalt, mechanism of
7440-48-4, compds.
catalysts, contg. cation exchangers, for liq.-phase oxidn. of cyclohexane and cyclohexanone to dicarboxylic acids
110-15-6, preparation
110-94-1
124-04-9, preparation
formation of, by liq.-phase oxidn. of cyclohexane and cyclohexanone in presence of cobalt catalysts
110-82-7, reactions
oxidn. of, to dicarboxylic acids in liq. phase, in presence of cyclohexanone
108-94-1, reactions
oxidn. of, to dicarboxylic acids in presence of cyclohexane, kinetics of
108-93-0, reactions
oxidn. of, to dicarboxylic acids, in presence of cobalt catalyst in liq. phase

109:210332

Catalyst for mercaptans oxidation obtained by cobalt(II) complexes immobilization on silica surface.

Tashkova, K.; Prakhov, L.; Karaenev, S. (Inst. Chem. Technol., Burgas, Bulg.). Heterog. Catal., 6th, Pt. 2, 19-24 (English) 1987. CODEN: HECAEJ. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry)

Kinetic curves for EtSH oxidn. in presence of Co(II) phthalocyanine tetrasulfonic acid tetrasodium salt immobilized on SiO₂ surface via a coordination bond to pyridine, chem. bound to the SiO₂ surface, were shown. The mechanism was discussed.

Keywords

mercaptan oxidn immobilized phthalocyanine symposium
pyridine coordinated phthalocyanine catalyst symposium
cobalt phthalocyanine immobilized catalyst symposium

Index Entries

Oxidation catalysts

cobalt phthalocyanine coordinated to silica-anchored pyridine, for Et mercaptan

Oxidation

of Et mercaptan in presence of cobalt phthalocyanine coordinated to silica-anchored pyridine

117441-61-9

117472-89-6, silica supported

catalysts, for oxidn. of Et mercaptan

75-08-1

oxidn. of, in presence of cobalt phthalocyanine coordinated to silica-anchored pyridine

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109:170897

Papain-catalyzed peptide synthesis in organic solvent systems with extremely low water content.

Fischer, Ute; Schellenberger, Volker; Mitin, Yu. V.; Jakubke, Hans Dieter (Dep. Biochem., Karl Marx Univ., Leipzig 7010, Ger. Dem. Rep.). Pept. Chem., Volume Date 1987 413-16 (English) 1988.

CODEN: PECHDP. ISSN: 0388-3698. DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 7

A symposium. Coupling of amino acid or peptide carboxamidomethyl esters with amines, amino acids or peptides in the presence of polyamide-immobilized papain in MeCN/C₆H₆ (95:5) with 0.6% water gave the corresponding peptides in good yields. Thus, coupling of Me₃CO₂C-Tyr-Gly-OCH₂CONH₂ with H-Val-OCMe₃

H-Gly-Phe-Leu-OCMe₃, or H₂N(CH₂)₄Me gave the corresponding peptides in 54-98% yields.

Keywords

papain immobilized catalyst peptide coupling symposium

Index Entries

Peptides, preparation

prepn. of, by coupling of carboxamidomethyl esters in the presence of immobilized papain

9001-73-4, polyamide-immobilized

catalyst, for peptide coupling of carboxamidomethyl esters with amino acids

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109:109666

Epoxidation of α -methylstyrene with tert-butyl hydroperoxide catalyzed by immobilized molybdenum complexes.

Tanielyan, S.; Kropf, H.; Ivanov, S. (Inst. Org. Chem., Sofia BG-1113, Bulg.). Heterog. Catal., 6th, Pt. 2, 43-8 (English) 1987. CODEN:

HECAEJ. DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 67

A lecture on the title epoxidn. catalyzed by immobilized Mo complexes of the form carrier-Z-MoO₂-R [e.g., carrier = Vulkasil-S, Z = (8-hydroxy-7-quinolinyl)-2-furylmethoxy, R = 8-hydroxyquinoline].

Keywords

epoxidn methylstyrene butyl hydroperoxide catalyst
styrene methyl epoxidn catalyst
molybdenum complex catalyst epoxidn methylstyrene
polymer bound hydroxyquinoline molybdenum catalyst

Index Entries

Polymer-supported reagents
hydroxyquinoline deriv.-molybdenum complexes, catalysts, for
epoxidn. of methylstyrene, mechanism with
Epoxidation
of methylstyrene with Bu hydroperoxide in presence of
polymer-supported hydroxyquinoline deriv.-molybdenum
complexes, mechanism of
Epoxidation catalysts
polymer-supported hydroxyquinoline deriv.-molybdenum
complexes, for methylstyrene, mechanism with
148-24-3, polymer-supported, molybdenum complexes
7439-98-7, polymer-supported hydroxyquinoline deriv. complexes
catalysts, for epoxidn. of methylstyrene
75-91-2
epoxidn. by, of methylstyrene in presence of polymer-supported
hydroxyquinoline deriv.-molybdenum complexes
98-83-9, reactions
epoxidn. of, with Bu hydroperoxide in presence of
polymer-supported hydroxyquinoline deriv.-molybdenum
complexes

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109:57565

Manufacture of shaped bodies of calcium phosphate granules as artificial bone material and carrier for immobilized enzymes and catalysts.

Nakamura, Seishiro; Okami, Katsutoshi; Asada, Masayuki (Kuraray Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63095173 A2 26 Apr 1988 Showa, 4 pp. (Japan) CODEN: JKXXAF. CLASS: ICM:

C04B038-00. APPLICATION: JP 86-238948 6 Oct 1986.

DOCUMENT TYPE: Patent CA Section: 49 (Industrial Inorganic Chemicals) Section cross-reference(s): 63

Gelatinous Ca phosphate having a Ca/P molar ratio = 1.45-1.75 pptd. from Ca²⁺ and PO₄³⁻ ions from a pH >8 aq. soln. is loaded in an org. material having a 3-dimensional porous structure, dried, and the org. material is removed to obtain a shaped body of Ca phosphate granules contg. hydroxylapatite and/or Ca₃(PO₄)₂. A soln. of 250 g

Ca(NO₃)₂·4H₂O dissolved in 0.7 L H₂O was mixed with 0.79 L 28% NH₄OH and 0.3 L H₂O. A soln. of 84 g (NH₄)₂HPO₄ dissolved in 1 L H₂O was mixed with 0.48 L 28% NH₄OH and 1 L H₂O, dropwise to the Ca(NO₃)₂ soln. at 20° under stirring, the mixt. was refluxed at 80° for 20

min, cooled, rest for 2 days, centrifuged at 2000 g using a 1000-mesh polypropylene filter cloth, the filter cake was washed with water to neutral, coated on a polyurethane foam (10 mm thick, 11-16 pores/25 mm), dried at 80° for 1 day, heated at 500° for 3 h, and fired at 1100° for 2 h to obtain a sintered Ca phosphate of 16-32-mesh porosity at an 87% yield. The product had a relative d. of 99.2%, had no sharp points on the granules and was suitable for use as bone filler.

Keywords

calcium phosphate catalyst carrier
immobilized enzyme carrier calcium phosphate
bone filler hydroxylapatite manuf

Index Entries

Bone
artificial, hydroxylapatite for, manuf. of
Enzymes
immobilized, carriers for, calcium phosphate, manuf. of
Catalysts and Catalysis
supports, hydroxylapatite for, manuf. of
1306-06-5
7758-87-4
manuf. of, for artificial bone material and catalyst and enzyme carriers

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109:28918

Attachment of riboflavin derivatives to electrode surfaces.
Durfor, Charles N.; Yenser, Barbara A.; Bowers, Mark L. (GTE Lab., Inc., Waltham, MA 02254, USA). J. Electroanal. Chem. Interfacial Electrochem., 244(1-2), 287-300 (English) 1988. CODEN: JEIEBC.
ISSN: 0022-0728. DOCUMENT TYPE: Journal CA Section: 72
(Electrochemistry) Section cross-reference(s): 6
A procedure is described for the site-specific immobilization of riboflavin cofactors on Pt, Au, and C electrode surfaces. The cofactors were bound to each electrode surface through the 8-Me group of the flavin moiety. Stable monolayer coverages of flavin coenzymes were formed by initially coating each electrode surface with 3-mercaptopropylsilane followed by reaction with 8-a-bromo-O-tetraacetylriboflavin. The mild derivatization conditions developed in this study were necessary to avoid competing side reactions, including the decompn. of flavin derivs. Different methods for synthesizing these flavin-silane-modified electrodes were examd. In addn., the potential vs. pH behavior of these flavin-modified electrodes is reported.

Keywords

riboflavin deriv modification electrode
platinum gold carbon riboflavin immobilization
flavin decompn mercaptopropylsilane adsorption
modified electrode flavin silane pH

Index Entries

Reduction catalysts
flavin immobilized on electrode coated with silane, for oxygen
Electrodes
flavin-silane modified
Reduction, electrochemical
of flavins immobilized on silane-modified electrodes
Chemisorption

of flavins, on electrode coated with silane
 Redox reaction
 electrochem., of flavins immobilized on silane-modified electrodes
 Electric potential
 half-wave, for flavins immobilized on electrodes coated with
 silanes
 7440-06-4, uses and miscellaneous
 7440-44-0, uses and miscellaneous
 7440-57-5, uses and miscellaneous
 electrode, modified with flavin and silane
 14814-09-6
 24801-88-5
 electrodes coated with, flavin immobilization in relation to
 29084-53-5
 immobilization of, on electrode coated with silane
 99128-37-7
 immobilization of, on electrode coated with silane, electrochem. in
 relation to
 7782-44-7, reactions
 redn. of, electrode coated with flavin-silane as catalyst for

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108:82639

Hydrosilylation by fixed complexes. Influence of the surface on catalysis
 of the reaction of hydrosilylation by fixed complexes of Group VIII
 metals.

Reikhsfel'd, V. O.; Skvortsov, N. K.; Brovko, V. S. (Lensovet Technol.
 Inst., Leningrad 198013, USSR). Homogeneous Heterog. Catal., Proc.
 Int. Symp. Relat. Homogeneous Heterog. Catal., 5th, 541-9. Edited by:
 Ermakov, Yu. I.; Likholobov, V. A. VNU Sci. Press: Utrecht, Neth.
 (English) 1986. CODEN: 56DTA9. DOCUMENT TYPE: Conference
 CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
 Mechanisms) Section cross-reference(s): 29

The peculiarities of the catalytic action of transition metal complexes
 supported on either org. polymer or modified inorg. matrixes were
 examd. in catalytic hydrosilylation. Although the mechanism of action of
 supported metal complexes and their sol. analogs are essentially
 similar, there are some specific effects caused by the influence of the
 surface. These are the dependences of the catalytic activity and
 selectivity on the nature of the matrix, on the degree of satn. of the
 surface by metal complexes, and on the structure of surface onium
 groups. The supporting of complexes also influences regio- and
 stereoselectivity of the reaction. The use of supported transition metal
 complexes allows one to control the efficiency of the hydrosilylation
 process.

Keywords

hydrosilylation catalyst transition metal complex

Index Entries

Alkenes, reactions
 hydrosilylation of, on polymeric catalyst with onium group-bound
 platinum complexes
 Hydrosilylation catalysts
 transition metal complexes, polymer-immobilized by assocn. with
 onium groups, for alkenes
 Transition metals, compounds
 complexes, catalysts, polymer-immobilized by assocn. with onium
 groups, for hydrosilylation of alkenes
 Onium compounds
 polymeric, catalysts, with assocd. platinum complexesm, for
 hydrosilylation of alkenes

7440-06-4, uses and miscellaneous
catalysts, polymer-immobilized, for hydrosilylation of alkenes

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108:21083

Hydrogenation catalysts fixed to functionalized silica gel and their resistance to elution of active metal from them.

Capka, M. (Inst. Fund. Chem. Proc., Czech. Acad. Sci., Prague 16502, Czech.). Mezhdunar. Simp. Svyazi Gomogennym Geterog. Katal., 5th, Volume 2, Issue 1, 182-202. Edited by: Ermakov, Yu. I.; Likholobov, V. A. Akad. Nauk SSSR, Sib. Otd., Inst. Katal.: Novosibirsk, USSR.

(Russian) 1986. CODEN: 55TGA9. DOCUMENT TYPE: Conference

CA Section: 21 (General Organic Chemistry) Section

cross-reference(s): 67

The following title catalysts were prepd. and tested: (1) neutral Rh complexes immobilized by bidentate phosphines, (2) cationic Rh complexes attached to silica gel via monodentate phosphines, and (3) Ti(IV) complexes attached to an immobilized h5-cyclopentadienyl ligand. The effects of structure and method of prepn. on the activity, selectivity, and stability of these catalysts were described.

Keywords

hydrogenation catalyst rhodium titanium complex
rhodium complex immobilized catalyst hydrogenation
titanium complex immobilized catalyst hydrogenation

Index Entries

Kinetics of hydrogenation
of acetamidocinnamic acid and octene with rhodium and titanium complex catalysts

Hydrogenation catalysts

rhodium and titanium complexes fixed on silica gel, for org. compds.

7440-32-6, complexes fixed on silica gel

catalysts, for hydrogenation of octene

7440-16-6, complexes fixed on silica gel

catalysts, for hydrogenation of org. compds.

111-78-4

592-76-7

628-71-7

1700-10-3

55065-02-6

hydrogenation of, rhodium complexes fixed on silica gel as catalysts for

111-66-0

hydrogenation of, titanium complexes fixed on silica gel as catalysts for

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107:217943

Dehydration of aldoses catalyzed by gel-immobilized zirconium porphyrin complex.

Potapov, G. P.; Krupenskii, V. I.; Alieva, M. I. (Syktyvkar. Univ., Syktyvkar, USSR). Kinet. Katal., 28(1), 205-7 (Russian) 1987.

CODEN: KNKTA4. ISSN: 0453-8811. DOCUMENT TYPE: Journal

CA Section: 33 (Carbohydrates) Section cross-reference(s): 22

Kinetic parameters were detd. for the dehydration of D-xylose and D-glucose, catalyzed by a zirconium-porphyrin-complex immobilized on a polyacrylamide gel, at 80-100° in an aq. medium.

Keywords

kinetics dehydration aldose
glucose dehydration kinetics
xylose dehydration kinetics

Index Entries

Kinetics of dehydration
of glucose and xylose catalyzed by zirconium-porphyrin catalyst
immobilized on polyacrylamide gel
Dehydration catalysts
zirconium-porphyrin complex immobilized on polyacrylamide gel,
for aldoses
50-99-7, reactions
58-86-6, reactions
dehydration of, catalyzed by zirconium-porphyrin complex
immobilized on a polyacrylamide gel, kinetics of

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107:154806

Cationic polymerization of 9-vinylcarbazole in the presence of boron trifluoride immobilized on a polymer gel.
Potapov, G. P.; Politova, N. K.; Borodkina, M. A.; Malakhova, I. A.; Vakhnina, T. P. (Syktyvkar. Gos. Univ., Syktyvkar, USSR). Vysokomol. Soedin., Ser. A, 29(8), 1689-93 (Russian) 1987. CODEN: VYSAAF.
ISSN: 0507-5475. DOCUMENT TYPE: Journal CA Section: 35
(Chemistry of Synthetic High Polymers)
A one-component, gel-immobilized catalyst for cationic polymn. was created from BF₃ and a crosslinked acrylic copolymer and was used to polymerize 9-vinylcarbazole to optically homogeneous polymers with high mol. wt. and stereoregularity (isotacticity degree 58%). The immobilized catalyst had high activity and could be reused.

Keywords

boron fluoride supported polymn catalyst
acrylic polymer support trifluoroboron catalyst
vinylcarbazole polymn supported catalyst
cationic polymn supported catalyst

Index Entries

Tacticity
of poly(vinylcarbazole) prepd. in presence of polymer-supported boron trifluoride catalysts
Acrylic polymers, uses and miscellaneous
supports, for boron trifluoride catalysts, for polymn. of vinylcarbazole
Polymerization
cationic, of vinylcarbazole, in presence of polymer-supported boron trifluoride, reaction conditions effect on
Polymerization catalysts
cationic, supported, boron trifluoride, on acrylic polymer, for vinylcarbazole
7637-07-2, uses and miscellaneous
catalysts, acrylic polymer-supported, for cationic polymn. of vinylcarbazole
25067-59-8
prepn. of, in presence of acrylic polymer-supported boron trifluoride catalysts, mol. wt. and stereoregularity in

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107:143491

Analysis of current-potential curves for two consecutive

electron-transfer reactions mediated by an electron-transfer redox catalyst immobilized on rotating disk electrodes as a monolayer. Tokuda, Koichi; Takehana, Yasuo; Aoki, Koichi; Matsuda, Hiroaki (Grad. Sch. Nagatsuta, Tokyo Inst. Technol., Yokohama 227, Japan). Shokubai, 29(2), 126-9 (Japanese) 1987. CODEN: SHKUJ. ISSN: 0559-8958. DOCUMENT TYPE: Journal CA Section: 72 (Electrochemistry) Section cross-reference(s): 22, 67 Theor. equations of current-potential curves are presented for 2 consecutive mediated electron-transfer oxidn. or redn. reactions of species in solns. by a redox mediator catalyst confined to the surface of a rotating disk electrode as a monolayer. Current-potential curves for mediated electron-transfer oxidn. of hydroquinones in soln. by tris(bipyridine) osmium complexes with long alkyl chains immobilized as a monolayer by the Tangmuir-Brodgett obtained. Their logarithmic plots are found to be nonlinear, which indicates that the interactions among the confined species must be taken into consideration. The equations which take into account the interactions were applied to the anal. of the current-potential curves and the rate const. and interaction parameters are evaluated.

Keywords

electron transfer immobilized catalyst electrode
current potential mediated redox reaction
electrooxidn hydroquinone osmium complex mediator

Index Entries

Oxidation, electrochemical
of hydroquinone and its halo derivs. on rotating electrode with immobilized osmium complex
Redox reaction
electrochem., on rotating disk electrode with mediator monolayer, current-potential curves for
Oxidation catalysts
electrochem., osmium complexes, on rotating disk electrode, for hydroquinone and its derivs.
96342-93-7
catalysts, on rotating disk electrode, for oxidn. of hydroquinone and its halo derivs.
123-31-9, reactions
583-69-7
615-67-8
oxidn. of, electrochem., osmium complex on rotating disk electrode as mediator for, current-potential curves in relation to

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107:134712

Polymerization of ethylene in the presence of titanium-magnesium catalysts immobilized on polymer supports. Bochkina, A. M.; Pomogailo, A. D.; D'yachkovskii, F. S. (Inst. Khim. Fiz., Chernogolovka, USSR). Vysokomol. Soedin., Ser. A, 29(7), 1353-8 (Russian) 1987. CODEN: VYSAF. ISSN: 0507-5475. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) During ethylene polymn. MgCl₂-TiCl₃ catalysts supported on polyethylene (I) grafted with functional group-contg. monomers were similar to inorg.-supported catalysts with respect to kinetic parameters, activity, and rate const. of chain transfer to monomer, H, and organoaluminum cocatalyst. The polymer-supported catalysts, however, had low Mg content and regulation of polymer mol. wt. was easy. The polymer supports used were I grafted with acrylic acid, allyl alc., diallylamine, and Me vinyl ketone.

Keywords

magnesium titanium catalyst polymer supported
 polymn catalyst magnesium titanium supported
 support polymeric magnesium titanium catalyst
 ethylene polymn kinetics supported catalyst

Index Entries

Kinetics of chain transfer
 in polymn. of ethylene, in presence of polymer-supported
 titanium-magnesium catalysts
 Kinetics of polymerization
 of ethylene, in presence of polymer-supported titanium-magnesium
 catalysts
 Polymer-supported reagents
 titanium-magnesium catalysts, for polymn. of ethylene, kinetics in
 relation to
 Polymerization catalysts
 Ziegler-Natta, magnesium chloride-titanium trichloride,
 polymer-supported, for ethylene, activity of
 7705-07-9, uses and miscellaneous
 catalysts, contg. magnesium chloride, polymer-supported, for
 polymn. of ethylene, kinetics in relation to
 75-24-1
 97-93-8, uses and miscellaneous
 100-99-2, uses and miscellaneous
 1191-15-7
 catalysts, contg. polymer-supported magnesium-titanium
 component, for polymn. of ethylene, chain transfer kinetics
 and mol. wt. regulation in relation to
 7786-30-3, uses and miscellaneous
 catalysts, contg. titanium trichloride, polymer-supported, for polymn.
 of ethylene, kinetics in relation to
 74-85-1, reactions
 polymn. of, in presence of polymer-supported titanium-magnesium
 catalysts, kinetics of
 98846-22-1
 110339-70-3
 110339-71-4
 110339-72-5
 supports, for magnesium-titanium catalysts, for polymn. of ethylene

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107:5604

Combined processes with chemical catalysts and biocatalysts:
 mannitol production.

Makkee, M.; Kieboom, A. P. G.; Van Bekkum, H. (Lab. Org. Chem., TH
 Delft, Delft, Neth.). PT-Procestechn., 40(10), 46-7 (Dutch) 1985.
 CODEN: PTPTBP. ISSN: 0032-4094. DOCUMENT TYPE: Journal;
 General Review CA Section: 16 (Fermentation and Bioindustrial
 Chemistry)

A review with 5 refs. discussing mannitol formation from glucose by a
 one-step system that combines immobilized glucose isomerase with a
 Cu hydrogenation catalyst.

Keywords

review mannitol prodn catalyst biocatalyst

Index Entries

7440-50-8, biological studies
 as catalyst, in mannitol prepn. from glucose
 9055-00-9

immobilized, mannitol prepn. from glucose with
50-99-7, biological studies
mannitol prepn. from, catalyst and biocatalyst in
69-65-8
prepn. of, from glucose, catalyst and biocatalyst in

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106:175485

Selective syntheses using cyclodextrins as catalysts. Part 3.
Improvements by immobilization of selective catalysts for the
synthesis of 4-hydroxybenzoic acid.

Komiyama, Makoto; Sugiura, Izuru; Hirai, Hidefumi (Fac. Eng., Univ.
Tokyo, Tokyo 113, Japan). J. Mol. Catal., 36(3), 271-82 (English)
1986. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE:

Journal CA Section: 22 (Physical Organic Chemistry)

Improvements of b-cyclodextrin (b-CyD) as a catalyst for selective
syntheses of 4-hydroxybenzoic acids have been achieved by its
immobilization. Three types of immobilized b-CyD catalysts (with molar
ratios 5.7, 3.3 and 1.2, resp., of b-CyD residue to 2-hydroxypropyl
residue) were prepd. by the reaction of b-CyD with epichlorohydrin. All
the immobilized catalysts exhibit 100% selectivity and high (larger than
80 mol%) yield for the syntheses of 4-hydroxybenzoic acids from the
corresponding phenols and carbon tetrachloride in alk. aq. solns. In the
absence of the immobilized catalysts, however, the yields and the
selectivities are much lower: 15 mol% and 56% for 4-hydroxybenzoic
acid. The selectivities (100%) exhibited by the immobilized catalysts
are considerably larger than the values (92-99%) obtained with free
b-CyD catalyst. The immobilized b-CyD catalysts are easily recovered
from the reaction mixts. either by centrifugation or by filtration, and are
successfully re-used without any measurable loss in the catalytic
activity. The enhancement of the selective catalysis of b-CyD by
immobilization has been attributed to a specific reaction field effect
produced by many alkoxide ions of b-CyD residues in the immobilized
catalysts.

Keywords

hydroxybenzoic acid
cyclodextrin catalyst
phenol carboxylation catalyst

Index Entries

Carboxylation catalysts
cyclodextrins immobilized with epichlorohydrin, for phenols
95-48-7, reactions
108-95-2, reactions
carboxylation of, catalyst for
7585-39-9, immobilized with epichlorohydrin
catalysts, for carboxylation of phenols
69-72-7, preparation
83-40-9
99-96-7, preparation
499-76-3
prepn. of

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106:139098

Triphase catalysis. I. Synthesis and determination of the structure
parameters of chiral quaternary ammoniums supported on
polystyrene resin.

Boyer, Bernard; Lamaty, Gerard; Roque, Jean Pierre; Solofo, Jonis
(Lab. Chim. Org. Phys., Univ. Sci. Tech. Languedoc, Montpellier)

34060, Fr.). Nouv. J. Chim., 10(10), 553-8 (French) 1986. CODEN: NJCHD4. ISSN: 0398-9836. DOCUMENT TYPE: Journal CA Section: 37 (Plastics Manufacture and Processing) Section cross-reference(s): 35, 36, 38

Triphase catalysts comprising chiral amines immobilized on polystyrene (I) were prep'd. by brominating I with hexamethylene dibromide in the presence of PhMe and then quaternizing with chiral amines. A method for detg. the structure of the brominated resin and of the quaternized resin is presented which accounts for the different types of linkages in the product, i.e., crosslinking, quaternization, PhMe incorporation, etc. The quaternization increased with increasing crosslinking. Structural parameters affecting the quaternization could be varied, and the effects of Friedel-Crafts catalysts, AlBr₃, and PhMe incorporation are discussed.

Keywords

catalyst triphase polystyrene immobilized amine
structure chiral amine immobilized polystyrene
quaternized polystyrene prep'n structure

Index Entries

Polymer-supported reagents
chiral amines, on polystyrene, as triphase catalysts
Chains, chemical
Quaternary ammonium compounds, properties
structure of, of chiral amines immobilized on polystyrene
Catalysts and Catalysis
triphasic, chiral amines immobilized on polystyrene, prep'n. and structure of
56-54-2, reaction products with polystyrene and dibromohexane and toluene
108-88-3, reaction products with dibromohexane and polystyrene and chiral amines
118-10-5, reaction products with polystyrene and dibromohexane and toluene
130-95-0, reaction products with polystyrene and dibromohexane and toluene
357-57-3, reaction products with polystyrene and dibromohexane and toluene
485-71-2, reaction products with polystyrene and dibromohexane and toluene
552-79-4, reaction products with polystyrene and dibromohexane and toluene
629-03-8, reaction products with polystyrene and toluene and chiral amines
9003-53-6, reaction products with dibromohexane and toluene and chiral amines
catalysts, triphase, prep'n. and structure of

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106:23824

Catalysis by porphyrin and phthalocyanine complexes fixed to oxide supports.

Romanovskii, B. V. (USSR). 5 Mezhdunar. Simp. po Svyazi mezhdum Gomogen. i Geterogen. Katal., Novosibirsk, 15-19 Iyulya, 1986. Dokl., Novosibirsk, 2(CH 1), 40-59 From: Ref. Zh., Khim. 1986, Abstr. No. 21B4280(Russian) 1986. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Title only translated.

Keywords

catalyst porphyrin phthalocyanine complex immobilized

Index Entries

Catalysts and Catalysis

Redox reaction catalysts

phthalocyanine and porphyrin complexes, immobilized on oxide supports

Porphyrins

metal complexes, immobilized on oxide supports, catalysts by

574-93-6, derivs., complexes

catalysts, immobilized on oxide supports

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106:23821

Synthetic polymers in the design of metal-complex catalytic systems.

Kabanov, V. A.; Smetanyuk, V. I. (USSR). 5 Mezhdunar. Simp. po

Svyazi mezhdru Gomogen. i Geterogen. Katal., Novosibirsk, 15-19

Iyulya, 1986. Dokl., Novosibirsk, 2(CH 1), 3-24 From: Ref. Zh., Khim.

1986, Abstr. No. 21B4279(Russian) 1986. DOCUMENT TYPE:

Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 35

Title only translated.

Keywords

catalyst metal complex polymer immobilized

Index Entries

Polymers, uses and miscellaneous

catalysts immobilized on

Coordination compounds

catalysts, immobilized on polymer supports

Catalysts and Catalysis

Polymerization catalysts

metal complexes, polymer-immobilized

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106:23819

Hydrogenation catalysts attached to functionalized silica gel and their resistance to elution of active metal from them.

Capka, M. (USSR). 5 Mezhdunar. Simp. po Svyazi mezhdru Gomogen.

i Geterogen. Katal., Novosibirsk, 15-19 Iyulya, 1986. Dokl.,

Novosibirsk, 2(CH 1), 182-202 From: Ref. Zh., Khim. 1986, Abstr. No.

21B4281(Russian) 1986. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Title only translated.

Keywords

hydrogenation catalyst functionalized silica gel

active metal elution supported catalyst

Index Entries

Silica gel, uses and miscellaneous

metal complexes immobilized on, elution resistance of

Hydrogenation catalysts

metal complexes, immobilized on silica gel, elution resistance of active metal on

542-92-7, titanium (IV) complexes

7440-16-6, uses and miscellaneous

7440-32-6, uses and miscellaneous
7803-51-2, derivs., rhodium complexes
catalysts, immobilized on silica gel, elution resistance of active
metal in

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115:280651

Polymerization of 1-hexene in the presence of Ziegler-Natta catalysts
immobilized on a graphite surface.

Matkovskii, P. Ye.; Startseva, G. P.; Kosova, L. F.; Mel'nikov, V. N. (Inst.
Khim. Fiz., Chernogolovka, USSR). Vysokomol. Soedin., Ser. A,
33(9), 1886-8 (Russian) 1991. CODEN: VYSAAF. ISSN: 0507-5475.

DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic
High Polymers)

Polymn. of 1-hexene (I) in the presence of $\text{TiCl}_4\text{-Al(iso-C}_4\text{H}_9)_3$,
 $\text{TiCl}_4\text{-AlEt}_3$, $\text{TiCl}_4\text{-Et}_2\text{AlCl}$, $\text{TiCl}_4\text{-Me}_2\text{AlOAlMe}_2$ systems immobilized on
graphite led to formation of rubber-like poly-I-graphite composites with
high strain-strength characteristics. The nonimmobilized catalysts were
not active in the polymn. whereas the immobilized catalysts exhibited
high polymn. activity. $\text{TiCl}_4\text{-Al(iso-C}_4\text{H}_9)_3$ exhibited the highest activity.
Mol. wt. of poly-I was 4.2×10^4 .

Keywords

graphite supported Ziegler Natta catalyst
hexene polymn Ziegler Natta catalyst
catalytic activity graphite polymn hexene

Index Entries

Polymerization catalysts

Ziegler-Natta, graphite-supported, for hexene

96-10-6, uses and miscellaneous

97-93-8, uses and miscellaneous

100-99-2, uses and miscellaneous

7550-45-0, uses and miscellaneous

29429-58-1

Ziegler-Natta catalysts contg., supported on graphite, for polymn. of
hexene

25067-06-5

prepn. of, in presence of Ziegler-Natta catalysts, effect of graphite
catalyst support on

7782-42-5, uses and miscellaneous

supports, for Ziegler-Natta polymn. catalysts for hexene

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115:190752

Autowave propagation in heterogeneous active media.

Linde, H.; Engel, H. (Dep. Theor. Chem., Inst. Phys. Chem., Berlin
O-1199, Fed. Rep. Ger.). Physica D (Amsterdam), 49(1-2), 13-20

(English) 1991. CODEN: PDNPDT. ISSN: 0167-2789. DOCUMENT

TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and
Inorganic Reaction Mechanisms)

New results obtained in self-completion of autowaves using a 2-layer
gelled Belousov-Zhabotinskii medium with immobilized catalyst fed
from above are presented. The stability of the collision level of the
primary and of the secondary waves as well as different final outcomes
of their interaction are discussed. Colliding spiral waves lead to
characteristic cusp-shaped structures of the secondary waves with a
high pos. curvature at the edge of the cusp. Propagating through the
gel the corresponding wave fronts can break at the edge of the cusp.
These breaks generate small self-reproducing double spirals which
possess a higher frequency than a single spiral wave. The

spatiotemporal evolution of the small double spiral depends on the size of the break and on the excitability of the medium.

Keywords

autowave propagation Belousov Zhabotinskii oscillating reaction

Index Entries

Oscillating reaction catalysts

Belousov-Zhabotinskii, ferroin, for bromate with malonic acid, autowave propagation in relation to immobilization of

Oscillating reaction

Belousov-Zhabotinskii, of bromate with malonic acid, catalyzed by ferroin immobilized and fed from above, autowave propagation in

14708-99-7

catalyst, for oscillating reaction of bromate with malonic acid, autowave propagation in relation to immobilization of

141-82-2, reactions

oscillating reaction of, with bromate, catalyzed by ferroin and immobilized and fed from above, autowave propagation in

15541-45-4

oscillating reaction of, with malonic acid, catalyzed by ferrion immobilized and fed from above, autowave propagation in

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115:158435

Effects of polymer support on the substrate selectivity of covalently immobilized ultrafine rhodium particles as a catalyst for olefin hydrogenation.

Ohtaki, Michitaka; Komiyama, Makoto; Hirai, Hidefumi; Toshima, Naoki (Fac. Eng., Univ. Tokyo, Tokyo 113, Japan). Macromolecules, 24(20), 5567-72 (English) 1991. CODEN: MAMOBX. ISSN:

0024-9297. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds) Section cross-reference(s): 24, 67

Ultrafine Rh particles prep'd. by alc. redn. in the presence of a protective polymer were immobilized covalently onto a crosslinked polymer support by forming an amide bond between the primary amino group contained in the support and the Me acrylate residue in the protective polymer of the particles. The catalytic activity of the immobilized particles in the hydrogenation of olefins depended strongly on the substrates in the reactions. The immobilized ultrafine Rh particles hydrogenated hydrophilic substrates preferentially. In particular, substrates contg. a carboxyl group were hydrogenated by the immobilized catalyst more easily than by the dispersed catalyst of ultrafine Rh particles before the immobilization. The difference in the hydrogenation rates correlated with the soly. parameter of the substrates. Electrostatic interaction between the substrates and the polymer support increased the reaction rates.

Keywords

polymer supported rhodium hydrogenation catalyst

alkene hydrogenation polymer supported rhodium

unsatd compd hydrogenation rhodium catalyst

Index Entries

Alkenes, reactions

hydrogenation of, polymer-supported ultrafine rhodium catalysts for

Hydrogenation catalysts

polymer-supported ultrafine rhodium, for alkenes and unsatd. compds.

Polymer-supported reagents

ultrafine rhodium, catalysts, for hydrogenation of alkenes and other unsatd. compds.

78-94-4, reactions

79-10-7, reactions

96-33-3

107-11-9

107-18-6, reactions

109-67-1

109-92-2

110-83-8, reactions

141-79-7

142-29-0

592-41-6, reactions

625-27-4

625-38-7

627-27-0

hydrogenation of, polymer-bound ultrafine rhodium catalysts for

27155-03-9

protective support, for ultrafine rhodium catalysts for hydrogenation of alkenes and other unsatd. compds.

7440-16-6, polymer-bound

ultrafine, catalysts, for hydrogenation of alkenes and other unsatd. compds.

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115:91740

Ammonia-hydrazine conversion processes. XVII. Preparation of sulfonated resins as immobilized phase-transfer catalysts for the hydrolysis of benzophenone azine to hydrazine.

Hayashi, H.; Somei, J.; Akei, M.; Suga, T.; Kigami, H.; Hiramatsu, N.; Itoyama, H.; Nakano, T.; Okazaki, T. (Dep. Chem. Sci. Technol., Univ. Tokushima, Tokushima 770, Japan). J. Catal., 130(2), 547-55

(English) 1991. CODEN: JCTLA5. ISSN: 0021-9517. DOCUMENT

TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds) Section cross-reference(s): 67

Sulfonated resins of different acid-site distribution have been prepd. and characterized to obtain highly active immobilized phase-transfer catalysts for conversion of benzophenone azine to hydrazine in a liq.-solid-liq. triphase system. Sulfonation of crosslinked polystyrene with concd. H₂SO₄ under mild conditions gave various resins of lower acidity, but x-ray microanal. revealed the acid-site distribution to be like an eggshell, showing that the spheres were sulfonated from the external surface toward a central core. Lipophilic resins with uniform acid-site distribution were obtained by the ternary copolymer. of sodium p-styrenesulfonate, styrene, and divinylbenzene in aq. DMF. The acidity of the resins could be predicted based on the monomer content in the charge. The competing imbibition of two insol. liqs., toluene and water, by sulfonated resins balanced at 0.8 meq/g, in good agreement with the optimum acidity for azine conversion. The value corresponds to a sulfonic group per five pendant Ph groups of the skeletal polymer. The effect of particle size of ternary gel catalyst on the rate of azine conversion suggested the predominant contribution of acidic sites on the surface. Attempts were made to expose available sites on the surface as much as possible employing porous texture under the balanced-wetting environment. Thus, moderately sulfonated resins with a macroreticular structure showed high activity for azine conversion. A reactor device capable of continuous operation of liq.-solid-liq. triphase catalysis in a flow system and the results of an illustrative run with 90% conversion over 50 h onstream are also described. Authors counsel caution in handling poisonous and explosive hydrazine.

Keywords

hydrolysis azine sulfonated polystyrene
phase transfer catalyst hydrolysis azine
safety hydrazine
benzophenone azine hydrolysis catalyst

Index Entries

Hydrolysis
of benzophenone azine to hydrazine in triphasic systems
Hydrolysis catalysts
phase-transfer, sulfonated polystyrene resins, for benzophenone
azine
9003-70-7, sulfonated
84686-85-1
catalysts, for hydrolysis of benzophenone azine to hydrazine
983-79-9
hydrolysis of, sulfonated polystyrene resins as immobilized
phase-transfer catalysts for

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115:6960

Enzymic reaction in a three-phase liquid-liquid-solid catalyst system.
Application to the optical resolution of phenylalanine.
Crelrier, Simon; Renken, Albert; Flaschel, Erwin (Inst. Genie Chim., Ec.
Polytech. Fed. Lausanne, Lausanne CH-1015, Switz.). Swiss Chem,
13(1), 7-10, 12 (English) 1991. CODEN: SCHEDQ. ISSN:
0251-1703. DOCUMENT TYPE: Journal CA Section: 16
(Fermentation and Bioindustrial Chemistry) Section cross-reference(s):
7, 34
The development of a phasic system for the enzymic resoln. of racemic
phenylalanine (I) up to benchtop pilot plant scale is described. The
principle is based upon the hydrolysis of racemic Pr ester of I with
immobilized α -chymotrypsin (II) in which only the L-isomer reacts to give
enantiomerically pure L-I. By employing $\text{Me}_2\text{CHCH}_2\text{COMe}$ and H_2O as
solvents, several problems inherent to the monophasic system (such as
substrate autohydrolysis, dimerization, or pptn. at high pH or severe pH
decreases at the activity optimum of the enzyme (5.5-6.5) due to low
buffer capacity) are overcome, since the immiscible org. phase partially
exts. the neutral form of the ester, thus shifting the buffer capacity to
optimal reaction values. 100% Conversions are thereby obtained
without the necessity of external pH control. Various data are
presented for monophasic, biphasic, and triphasic (ie. with immobilized
II) systems, including conversions, substrate partitions between the 2
solvents, and reaction kinetics. Although batch expts. with the 3-phase
system were successful in a continuously stirred tank reactor, in
continuous operation in a plug flow reactor conversion did not exceed
80%, probably a result of mass transfer limitation between both liq.
phases.

Keywords

phenylalanine resoln immobilized chymotrypsin triphasic system

Index Entries

Kinetics, enzymic
of chymotrypsin and chymotrypsin immobilized deriv.
Resolution
of phenylalanine, by chymotrypsin hydrolysis of Pr esters in
triphasic system
54966-38-0
partition of, between isobutylmethyl ketone and water
63-91-2, reactions
resoln. of, by chymotrypsin hydrolysis of Pr esters in biphasic

system

9004-07-3

a, immobilized, phenylalanine resoln. by hydrolysis of Pr esters
with, in triphasic system

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114:172293

Catalytic decomposition of hydrogen peroxide with
resin-dimethylamine-copper(II) complex ions.

Zaki, A. B.; El-Sheikh, M. Y.; Habib, A. M.; Ashmawy, F. M.; Gemeay,
A. H. (Fac. Sci., Tanta Univ., Tanta, Egypt). Z. Phys. Chem. (Leipzig),
271(5), 1027-35 (English) 1990. CODEN: ZPCLAH. ISSN:

0323-4479. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis,
Reaction Kinetics, and Inorganic Reaction Mechanisms)

The kinetics of H₂O₂ decompn. was studied in aq. medium in the
presence of Dowex-50W resin in the form of dimethylamine-Cu(II)
complex ions. The structure of the complex in the resin, detd. exptl.,
was found to have the total [Cu²⁺]: [dimethylamine] = 1:2 concn. ratio.
The active species, formed as an intermediate at the beginning of the
reaction, had an inhibiting effect on the reaction rate. The reaction was
1st order for [H₂O₂] a step-wise mechanism is proposed. Activation
parameters were detd.

Keywords

copper methylamine resin decompn hydrogen peroxide
catalyst copper methylamine resin decompn peroxide

Index Entries

Disproportionation catalysts

copper(II) dimethylamine complex ion immobilized on resin, for
hydrogen peroxide

Disproportionation

Kinetics of disproportionation

of hydrogen peroxide, catalyzed by copper(II) dimethylamine
complex ion immobilized on resin

11114-15-1

catalysts from copper(II) dimethylamine complex ion supported on,
for decompn. of hydrogen peroxide

133127-11-4

catalysts from resin support and, for decompn. of hydrogen
peroxide

7722-84-1, reactions

decompn. of, catalyzed by copper(II) dimethylamine complex ion
immobilized on resin, kinetics and mechanism of

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114:123082

Enantioselective synthesis of 5,10-dideaza-5,6,7,8-tetrahydrofolic acid
derivatives as antifolates.

Barnett, Charles Jackson; Wilson, Thomas Michael (Lilly, Eli, and Co.,
USA). Eur. Pat. Appl. EP 407212 A1 9 Jan 1991, 21 pp.

DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT,
LI, NL, SE. (European Patent Organization) CODEN: EPXXDW.

CLASS: ICM: C07D471-04. ICS: C07C247-10; C07D211-76.

APPLICATION: EP 90-307407 6 Jul 1990. PRIORITY: US 89-377021

7 Jul 1989. DOCUMENT TYPE: Patent CA Section: 34 (Amino Acids,
Peptides, and Proteins) Section cross-reference(s): 1, 9

An enantioselective synthesis of the title derivs., e.g. (6R)- and (6S)-I, in
13 steps is given. The key step is the stereoselective esterification of
(HOCH₂)₂CHCH₂CH₂C₆H₄Br-4 with MeOAc in the presence of

immobilized porcine pancreatic lipase to give
(R)-AcOCH₂CH(CH₂OH)CH₂CH₂C₆H₄Br-4.

Keywords

asym synthesis dideazatetrahydrofolic acid antifolate
enzymic transesterification hydroxymethylbutanol lipase
stereoselective transesterification hydroxymethylbutanol lipase

Index Entries

Asymmetric synthesis and induction
of dideazatetrahydrofolic acid
Transesterification
enzymic, of bromophenyl(hydroxymethyl)butanol with Me acetate in
presence of immobilized lipase
Transesterification catalysts
stereoselective, immobilized lipase, for
bromophenyl(hydroxymethyl)butanol with Me acetate
3140-73-6
activator, for peptide coupling of glutamate with
(carboxyphenylethyl)tetrahydropyridopyrimidine
9001-62-1
immobilized, as catalyst for stereoselective transesterification of
bromophenyl(hydroxymethyl)butanol with Me acetate
1118-89-4
peptide coupling of, with
(carboxyphenylethyl)tetrahydropyridopyrimidine
stereoisomers
127633-53-8
peptide coupling of, with glutamate, chloro(dimethoxy)triazine
activator for
132554-01-9
prepn. and acidic hydrolysis of
127633-48-1
prepn. and conversion of, to dideazatetrahydrofolic acid deriv.
132554-03-1
132619-01-3
prepn. and cyclocondensation of, with guanidine,
tetrahydropyridopyrimidine from
127633-56-1
prepn. and desilylation of
127633-47-0
127633-54-9
prepn. and mesylation of
127633-52-7
prepn. and peptide coupling of, with di-Et glutamate,
chloro(dimethoxy)triazine activator for
127633-57-2
prepn. and reductive cyclization of, piperidinone derivs. from
127633-62-9
prepn. and sapon. of
127633-50-5
prepn. and sequential substitution of, with copper cyanide and
acidic hydrolysis of
132554-02-0
prepn. and substitution of, with malonate anion
127633-55-0
132554-00-8
prepn. and substitution of, with sodium azide
132618-99-6
132619-00-2
prepn. and O-methylation of, with trimethyloxonium tetrafluoroborate
106400-18-4
106400-81-1

prepn. of
127633-44-7
prepn., silylation, or mesylation of
105-53-3
sequential deprotonation and substitution of, with
azidomethyl(bromophenyl)butanol mesylate
79-20-9
transesterification of, with bromophenyl(hydroxymethyl)butanol,
lipase-catalyzed
127633-43-6
transesterification of, with methylacetate, stereochem. of
lipase-catalyzed

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114:7189

Papain-catalyzed peptide synthesis and oligomerization of amino acid amides in organic solvents.
Gaertner, Hubert F.; Ferjancic, Anne; Puigserver, Antoine J. (Cent. Biochim. Biol. Mol., CNRS, Marseille 13402, Fr.). Biocatalysis, 3(3), 197-205 (English) 1990. CODEN: BIOCED. ISSN: 0886-4454.
DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 9
Papain, either modified with polyethylene glycol or adsorbed on porous glass beads, was used to catalyze peptide bond formation between N-acyl L-amino acid esters and L-phenylalanine amide in org. solvents. Optimal reaction parameters of the modified enzyme were derived from the dependence of its activity upon water and mercaptoethanol concns. in the reaction mixt. Under the same exptl. conditions, immobilized papain was found to be considerably less efficient than modified papain in catalyzing the synthesis of Na-benzoyl-L-lysine-L-phenylalanine amide in 1,1,1-trichloroethane. Moreover, the pH at which the enzyme has been lyophilized prior to its absorption on glass beads also had an important influence on the activity. Peptide synthesis yields higher than 90% were obtained with both papain forms when either basic or acidic amino acids were used as acyl-donor residues, while neutral and arom. residues were rather poor substrates but initiated a polymn. reaction.

Keywords

papain catalyst peptide synthesis
org solvent papain catalyst peptide
oligomerization peptide papain catalyst
amide amino acid coupling papain

Index Entries

Peptides, preparation
prepn. of, by papain-catalyzed coupling of acyl amino acid esters with phenylalanine amide in org. solvents
Polymerization
oligomerization, in papain-catalyzed peptide coupling of acyl amino acid esters with phenylalanine amide in org. solvents
9001-73-4, poly(ethylene glycol)-modified
catalysts, for peptide coupling of acyl amino acid esters with phenylalanine amide in org. solvents
60-24-2
7732-18-5, uses and miscellaneous
effect of, on papain-catalyzed peptide coupling of acyl amino acid esters with phenylalanine amide in org. solvents
130970-39-7
130991-12-7
formation of, in papain-catalyzed coupling of acyl amino acid ester with phenylalanine amide in org. solvent

9001-73-4

immobilized, catalysts, for peptide coupling of acyl amino acid esters with phenylalanine amide in org. solvents

5241-58-7

peptide coupling of, with acyl amino acid esters in org. solvents, papain catalysis of

1676-81-9

3483-82-7

3705-42-8

4779-31-1

5591-94-6

7244-67-9

17039-40-6

79893-89-3

peptide coupling of, with phenylalanine amide in org. solvents, papain catalysis of

1947-39-3

25529-46-8

71448-22-1

119237-54-6

121031-54-7

128554-23-4

130970-34-2

130970-35-3

130970-36-4

130970-37-5

130970-38-6

130970-40-0

130991-11-6

130991-13-8

prepn. of, by papain-catalyzed peptide coupling reaction in org. solvents

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113:132649

The use of immobilized glycosyltransferases in the synthesis of sialyloligosaccharides.

Auge, Claudine; Fernandez-Fernandez, Rosario; Gautheron, Christine (Inst. Chim. Mol. Orsay, Orsay 91405, Fr.). Carbohydr. Res., 200, 257-68 (English) 1990. CODEN: CRBRAT. ISSN: 0008-6215.

DOCUMENT TYPE: Journal CA Section: 33 (Carbohydrates) Section cross-reference(s): 7

The CMP-sialic acids I (R = H, Ac) were prepd. from CMP, phosphoenol pyruvate, N-acetylneuraminic acid or its 9-acetate, and a catalytic amt. of ATP in the presence of immobilized pyruvate kinase, nucleoside monophosphate kinase, inorg. pyrophosphatase, and CMP-sialic acid synthetase. CMP-NeuAc I were used as donors of N-acetylneuraminic acid in the reaction catalyzed by immobilized porcine liver b-D-Galp-(1@4)-a-D-GlcpNAc-(2@6)-sialyltransferase. Sialyloligosaccharides, e.g. II, were obtained on a 0.1-mmol scale by enzymic sialylation of b-D-Galp-(1@4)-b-D-GlcpNAc-(1@2)-a-D-Man-OMe, prepd. by enzymic galactosylation of b-D-GlcpNAc-(1@2)-a-D-Man-OMe.

Keywords

oligosaccharide sialyl prepn enzymic
CMP sialic acid condensation oligosaccharide
glycosyltransferase catalyst sialyloligosaccharide
neuraminic acid acetyl condensation oligosaccharide

Index Entries

Oligosaccharides
 sialo-, prepn. of, enzymic catalysts for
 131-48-6
 55717-54-9
 enzymic condensation of, with cytidine triphosphate
 47491-70-3
 58718-18-6
 enzymic sialylation of
 65-47-4
 enzymic synthesis and condensation of, with sialylic acid
 9067-82-7
 immobilized, use of, in condensation of sialic acid with cytidine
 triphosphate
 9075-81-4
 immobilized, use of, in sialylation of trisaccharides
 55797-38-1
 prepn. and enzymic galactosidation of
 3063-71-6
 98242-83-2
 prepn. and enzymic sialylation by, of trisaccharides
 96691-77-9
 prepn. and enzymic sialylation of
 129192-83-2
 129212-03-9
 129212-04-0
 prepn. of

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112:26288
 Catalytic activity of nickel-containing hydrogels during the oxidation of
 sodium sulfide.
 Malikov, T. S.; Astanina, A. N.; Rudenko, A. P. (Khim. Fac., Mosk. Gos.
 Univ., Moscow, USSR). Zh. Fiz. Khim., 63(7), 1973-6 (Russian) 1989.
 CODEN: ZFKHA9. ISSN: 0044-4537. DOCUMENT TYPE: Journal
 CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
 Mechanisms)
 The catalytic activity of Ni(II)-acrylamide hydrogel catalysts in Na₂S
 oxidn. was studied by electronic and IR spectroscopy. The Na₂S oxidn.
 rate depends on Ni concn. and on the extent of complex formation in
 the hydrogel phase. The absence of sol. Ni²⁺ compds. in the hydrogel
 during Na₂S oxidn. allows a series of secondary expts. to be carried
 out.

Keywords

nickel hydrogel oxidn catalyst sulfide
 sodium sulfide oxidn nickel catalyst
 acrylamide hydrogel immobilized nickel catalyst

Index Entries

Oxidation catalysts
 nickel hydrogel, for sodium sulfide
 Kinetics of oxidation
 of sodium sulfide, on nickel hydrogel catalysts
 7440-02-0, uses and miscellaneous
 catalysts, hydrogel-supported, for oxidn. of sodium sulfide
 79-06-1, uses and miscellaneous
 hydrogels, catalysts contg. nickel, for oxidn. of sulfide
 1313-82-2, reactions
 oxidn. of, on nickel hydrogel catalysts

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111:214856

Scope and limitations of the aldol condensation catalyzed by immobilized acylneuraminate pyruvate lyase.

Auge, Claudine; Bouxom, Benedicte; Cavaye, Bertrand; Gautheron, Christine (Inst. Chim. Mol. Orsay, Univ. Paris-Sud, Orsay 91405, Fr.). Tetrahedron Lett., 30(17), 2217-20 (English) 1989. CODEN: TELEAY. ISSN: 0040-4039. DOCUMENT TYPE: Journal CA Section: 33 (Carbohydrates) Section cross-reference(s): 9

D-Mannose and derivs. were treated with Na pyruvate and immobilized acylneuraminate lyase to give nonulosonic acids I (R1 = OH, H; R2 = OH, N3). Similar products were obtained from D-lyxose, D-glucose, and D-xylose.

Keywords

aldol condensation monosaccharide catalyst
condensation aldol monosaccharide pyruvate
nonulosonic acid
octulosonic acid
acylneuraminate pyruvate lyase aldol condensation

Index Entries

Monosaccharides

aldol condensation of, with pyruvate, catalysts for
Aldol condensation catalysts
immobilized acylneuraminate lyase, for pyruvate with sugars
50-99-7, reactions
58-86-6, reactions
154-17-6
1114-34-7
3458-28-4
10323-20-3
74164-24-2
97604-58-5
aldol condensation of, with pyruvate, catalysts for
113-24-6
aldol condensation of, with sugars, catalysts for
9027-60-5
immobilized, catalysts, for aldol condensation of sugars with pyruvate
27766-61-6
73650-00-7
75003-84-8
112574-55-7
120104-31-6
123457-66-9
123457-67-0
123457-68-1
123457-69-2
123468-25-7
123537-18-8
123537-19-9
123537-20-2
prepn. of

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111:134715

Excitatory amino acid agonists. Enzymic resolution, x-ray structure, and enantioselective activities of (R)- and (S)-bromohomoibotenic acid.

Hansen, Jan J.; Nielsen, Birgitte; Krosgaard-Larsen, Povl; Brehm, Lotte; Nielsen, Elsebet O.; Curtis, David R. (Dep. Chem., R. Dan. Sch.

Pharm., Copenhagen DK-2100, Den.). J. Med. Chem., 32(10), 2254-60 (English) 1989. CODEN: JMCMAR. ISSN: 0022-2623. DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 1, 28, 75

The R and S enantiomers of 4-bromohomoibotenic acid I, a selective and potent agonist at one class of the central (S)-glutamic acid receptors, were prepd. with an enantiomeric excess higher than 98.8% via stereoselective enzymic hydrolysis of racemic N-acetyl deriv. (RS)-II using immobilized aminoacylase. The abs. configuration of the enantiomers of I was established by x-ray crystallog. anal., which confirmed the expected preference of the enzyme for the (S) form of the substrate II. (S)-I and (RS)-I were potent neuroexcitants on cat spinal neurons in vivo, while (R)-I was a very weak excitant. (S)-I was more potent than (R)-I as an inhibitor of [3H]-(RS)- α -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid binding to rat brain synaptic membranes in vitro. In contrast, (S)- and (R)-I were equipotent as inhibitors of [3H]-(S)-glutamic acid binding in the presence of CaCl₂. The enantiomers of I showed no significant affinity for those binding sites on rat brain membranes which are labeled by [3H]kainic acid or [3H]-(R)-aspartic acid.

Keywords

bromohomoibotenic acid enantiomer
homoibotenic acid bromo enantiomer
neurotransmitter agonist bromohomoibotenic acid enantiomer
crystal structure bromohomoibotenic acid

Index Entries

Neurotransmitter agonists
bromohomoibotenic acid enantiomers
Crystal structure
Molecular structure
of bromohomoibotenic acid
Stereochemistry
of hydrolysis of racemic
(acetylamino)bromomethoxyisoxazolepropionic acid using
immobilized aminoacylase
71366-32-0
as neurotransmitter agonist
71366-31-9
hydrolysis-decarboxylation of
9012-37-7
immobilized, catalyst, for stereoselective hydrolysis of racemic
(acetylamino)bromomethoxyisoxazolepropionic acid
121253-50-7
prepn. and acetylation of
121313-18-6
prepn. and crystal structure of
121313-16-4
prepn. and demethylation of
121313-17-5
prepn. and hydrolysis of
121253-51-8
prepn. and stereoselective hydrolysis of, using immobilized
aminoacylase
121313-14-2
121313-15-3
prepn. of, as neurotransmitter agonist

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110:212294

Amino groups immobilized on silica gel: an efficient and reusable heterogeneous catalyst for the Knoevenagel condensation.

Angeletti, Enrico; Canepa, Carlo; Martinetti, Giovanni; Venturello, Paolo (Ist. Chim. Organ., Univ. Turin, Turin 10125, Italy). J. Chem. Soc., Perkin Trans. 1, (1), 105-7 (English) 1989. CODEN: JCPRB4. ISSN: 0300-922X. DOCUMENT TYPE: Journal CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Silica gel functionalized with amino groups is a useful insol. catalyst for the Knoevenagel condensation. The reaction is carried out under continuous-flow conditions and good yields are obtained when arom. aldehydes, cyclohexanone, and PhCOMe react with MeCOCH₂CO₂Et, NCCH₂CO₂Et, or NCCH₂CN. Lower yields are obtained with PhCOCH₂CO₂Et or (MeCO)₂CH₂; this fact and the easy dehydration of the aldol intermediate strongly suggest the participation of the residual free silanol groups of the matrix in the catalysis mechanism.

Keywords

Knoevenagel catalyst amine silica gel supported
active methylene Knoevenagel aldehyde ketone
alkene acyl
olefin acyl

Index Entries

Knoevenagel reaction
of active methylene compds. with aldehydes and ketones, silica gel-supported amine-catalyzed
Knoevenagel reaction catalysts
silica gel-supported propylamine derivs., for active methylene compds. with aldehydes and ketones
Acids, reactions
carbon, Knoevenagel reaction of, with aldehydes and ketones, silica gel-supported amine-catalyzed
Ketones, preparation
Nitriles, preparation
a,b-unsatd., prepn. of, by Knoevenagel reaction of active methylene compds. with aldehydes and ketones, silica gel-supported amine-catalyzed
108-94-1, reactions
Knoevenagel reaction of, with Et cyanoacetate, silica gel-supported amine-catalyzed
98-86-2, reactions
100-52-7, reactions
104-55-2
555-16-8, reactions
Knoevenagel reaction of, with active methylene compds., silica gel-supported amine-catalyzed
109-77-3
Knoevenagel reaction of, with aldehydes and acetophenone, silica gel-supported amine-catalyzed
141-97-9
Knoevenagel reaction of, with aldehydes, silica gel-supported amine-catalyzed
105-56-6
Knoevenagel reaction of, with benzaldehyde and ketones, silica gel-supported amine-catalyzed
94-02-0
123-54-6, reactions
Knoevenagel reaction of, with benzaldehyde, silica gel-supported amine-catalyzed
135-02-4
Knoevenagel reaction of, with malononitrile, silica gel-supported amine-catalyzed
105-53-3

attempted Knoevenagel reaction of, with benzaldehyde

2530-86-1

13822-56-5

immobilization of, on silica gel

620-80-4

2025-40-3

2700-22-3

2700-23-4

2834-10-8

4335-90-4

5439-39-4

5447-87-0

6802-76-2

13858-63-4

15802-69-4

17451-18-2

18300-89-5

prepn. of

2530-86-1, silica gel-supported

13822-56-5, silica gel-supported

prepn. of, as Knoevenagel reaction catalyst

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110:155652

Immobilization of manganese acetate hematoporphyrinate on a perfluorinated polymer film and the catalytic properties of the formed polymer catalyst in the oxidation of cholesterol.

Vorob'ev, A. V.; Lukashova, E. A.; Solov'eva, A. B.; Shifrina, R. R.;

Filatova, N. V.; Popkov, Yu. M.; Timashev, S. F. (Nauchno-Issled.

Fiz.-Khim. Inst. im. Karpova, USSR). Vysokomol. Soedin., Ser. B,

30(12), 903-7 (Russian) 1988. CODEN: VYSBAI. ISSN: 0507-5483.

DOCUMENT TYPE: Journal CA Section: 38 (Plastics Fabrication and

Uses) Section cross-reference(s): 67

IR spectroscopy was used to study the catalytic activity of Mn acetate hemotoporphyrinate (I) immobilized on the morpholine-modified tetrafluoroethylene-perfluoro-3,6-dioxo-5-methyl-8-sulfonylfluoro-1-octene copolymer film in oxidn. of cholesterol with O using NaBH₄ as reducing agent. The effective oxidn. rate const. in the presence of immobilized I catalyst was 1-3 orders of magnitude higher than the oxidn. rate const. for a homogeneous catalytic reaction with dissolved I.

An increase in the activity was attained by the formation of a microporous polymer structure ensuring better transport properties. A catalytically active system can be obtained only by impregnating copolymer with I as a 2.5% soln. in an imidazole-dioxene mixt.

Keywords

manganese acetate hematoporphyrinate immobilization fluoropolymer
polymer supported catalyst oxidn cholesterol

Index Entries

Polymer-supported reagents

catalysts, manganese acetate hematoporphyrinate on
tetrafluoroethylene-perfluorodioxamethylsulfonylfluorooctene
copolymer films, for oxidn. of cholesterol

Fluoropolymers

films, immobilization of manganese acetate hematoporphyrinate
catalysts on, for increased oxidn. rate of cholesterol

Oxidation catalysts

manganese acetate hematoporphyrinate immobilized on
perfluorinated polymer films, for cholesterol

26654-97-7

films, immobilization of manganese acetate hematoporphyrinate

catalysts on, for increased oxidn. rate of cholesterol
 107532-66-1
 immobilization of, on
 tetrafluoroethylene-perfluorodioxamethylsulfonylfluorooctene
 copolymer, for increased catalytic activity in oxidn. of
 cholesterol
 57-88-5, reactions
 oxidn. of, catalysts for, manganese acetate hematoporphyrinate
 immobilized on
 tetrafluoroethylene-perfluorodioxamethylsulfonylfluorooctene
 copolymer films as
 110-91-8, uses and miscellaneous
 tetrafluoroethylene-perfluorodioxamethylsulfonylfluorooctene
 copolymer films modified with, for immobilization of
 manganese acetate hematoporphyrinate catalysts for
 cholesterol oxidn.

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109:23364

Functional capsule membranes. Part 29. Thermolysin-immobilized
 capsule membranes as bioreactors in the synthesis of a dipeptide
 (precursor of aspartame) in an organic solvent.
 Okahata, Yoshio; Ijio, Kuniharu (Dep. Polym. Chem., Tokyo Inst.
 Technol., Tokyo 152, Japan). J. Chem. Soc., Perkin Trans. 2, (1), 91-6
 (English) 1988. CODEN: JCPKBH. ISSN: 0300-9580. DOCUMENT
 TYPE: Journal CA Section: 34 (Amino Acids, Peptides, and Proteins)
 Section cross-reference(s): 7
 Thermolysin (TLN) was covalently immobilized onto a large, ultrathin
 nylon capsule membrane grafted with poly[p-(aminomethyl)styrene]
 using glutaraldehyde. When the TLN-immobilized capsule contg. a
 buffer soln. (pH 7) in the inner aq. phase was immersed in a CHCl₃
 soln. of Z-Asp-OH (Z = PhCH₂O₂C) H-L-Phe-OMe with shaking at 40°,
 Z-L-Asp-L-Phe-OMe was produced efficiently in the outer CHCl₃ soln.
 From the Lineweaver-Burk plot, condensation in the aq.-org. solvent
 involves initial binding of Z-L-Asp-OH to the enzyme to form the
 Z-L-Asp-enzyme complex and then attack by H-L-Phe-OMe on the
 complex as the rate-detg. step to form the peptide linkage. The
 TLN-capsule system can be used repeatedly without denaturation of
 protein structures by org. solvents because the enzyme on the capsule
 membrane is protected by buffer solns. coming from the inside. The
 enzyme-immobilized capsule membrane is a new bioreactor in aq.-org.
 heterophases.

Keywords

peptide condensation thermolysin immobilized capsule
 kinetics peptide condensation thermolysin
 aspartylphenylalanine methyl ester enzymic prepn
 aspartame prepn thermolysin catalyst

Index Entries

Peptides, preparation
 di-, prepn. of, by coupling in the presence of capsule-bound and
 free thermolysin
 9073-78-3, nylon capsule membrane bound
 catalysts, for peptide coupling of (benzyloxycarbonyl)aspartic acid
 with phenylalanine Me ester
 13366-40-0
 29243-71-8
 formation of, by peptide hydrolysis in the presence of thermolysin
 26400-33-9
 hydrolysis of, in the presence of capsule-bound and free
 thermolysin, pH dependence of

9073-78-3

immobilization, as catalyst for peptide coupling of aspartic acid and phenylalanine derivs.

78663-07-7

inhibition by, in thermolysin-catalyzed coupling of aspartic acid and phenylalanine derivs.

2577-90-4

15028-44-1

peptide coupling of, with (benzyloxycarbonyl)aspartic acid in the presence of thermolysin, kinetics of

1152-61-0

peptide coupling of, with phenylalanine Me ester in the presence of thermolysin, kinetics of

33605-72-0

prepn. of, by peptide coupling in the presence of capsule-bound and free thermolysin

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108:82724

Selective catalytic reduction of nitric oxide with ammonia. II. Monolayers of vanadia immobilized on titania-silica mixed gels. Baiker, A.; Dollenmeier, P.; Glinski, M.; Reller, A. (Dep. Ind. Eng. Chem., Swiss Fed. Inst. Technol., Zurich CH-8092, Switz.). Appl. Catal., 35(2), 365-80 (English) 1987. CODEN: APCADI. ISSN: 0166-9834. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Monolayers of V2O5 were immobilized on pure TiO2 and SiO2, and on mixed gel carriers of SiO2 and TiO2 contg. 1-50 mol% TiO2. The catalysts were investigated with regard to their structural properties and their activity in selective catalytic redn. (SCR) of NH3 with NO. The textural properties of both pure and impregnated carriers depended strongly on their chem. compn. X-ray diffraction and high-resoln. electron microscopy indicated that SiO2 was present as an amorphous phase in all carriers, whereas cryst. domains of TiO2 (anatase) were found in carriers contg. ≥ 10 mol% TiO2. On all carriers the immobilized V2O5 species were well dispersed and disordered. The temp. of max. redn. rate, which reflects the ease of redn. of the supported V2O5 layer, decreased with increasing TiO2 content. It was highest for V2O5 supported on pure SiO2 (790 K) and lowest for V2O5 supported on TiO2 (700 K). The behavior is attributed to the markedly stronger support interaction of TiO2 compared with SiO2. The highest activity for SCR was found for V2O5 supported on mixed gels contg. 20 and 50 mol% TiO2. As a result of the weak support interaction, the V2O5 species supported on pure SiO2 tended to agglomerate when exposed to higher temp. under SCR conditions. This agglomeration was suppressed when TiO2 was added to the SiO2 matrix of the carrier. Of all the catalyst preps. only the V2O5 layer supported on equimolar TiO2-SiO2 and on pure TiO2 maintained stable activity for SCR when exposed to SO2-contg. feed.

Keywords

vanadia titania silica catalyst surface structure
nitric oxide redn ammonia vanadia catalyst
sulfur dioxide vanadia titania silica catalyst

Index Entries

Kinetics of reduction
of nitric oxide by ammonia, on vanadia-titania-silica catalysts
Surface structure
of vanadia-titania-silica catalysts, effect of compn. on
Pore
size of, of vanadia-titania-silica catalysts, effect of compn. on

Reduction

temp.-programmed, of vanadia-titania-silica, metal-support
interaction in relation to
Reduction catalysts
vanadia-titania-silica, for nitric oxide by ammonia, effect of compn.
on structure and activity of
1314-62-1, uses and miscellaneous
catalysts from titania and silica and, for redn. of nitric oxide by
ammonia, effect of compn. on structure and activity of
13463-67-7, uses and miscellaneous
catalysts from vanadia and silica and, for redn. of nitric oxide by
ammonia, effect of compn. of structure and activity of
7446-09-5, uses and miscellaneous
poison, for vanadia-titania-silica catalysts, effect of compn. on
resistance to
7664-41-7, reactions
redn. by, of nitric oxide, on vanadia-titania-silica catalysts, kinetics
of
10102-43-9, reactions
redn. of, by ammonia, on vanadia-titania-silica catalysts, kinetics of

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108:22932

Functional polymer capsules.

Okahata, Yoshio (Inst. Technol., Coll. Eng. Tokyo, Tokyo, Japan).

Kobunshi Kako, 36(6), 262-7 (Japanese) 1987. CODEN: KOKABN.

ISSN: 0368-6426. DOCUMENT TYPE: Journal; General Review CA

Section: 38 (Plastics Fabrication and Uses) Section

cross-reference(s): 48

A review with 9 refs. is given on polymer-encapsulated catalysts for
phase-transfer reactions and for electron-transfer reactions, and
polymer capsules with immobilized enzymes for synthesis with oil-H₂O
interface.

Keywords

review polymer capsule catalyst

reaction polymer capsule review

Index Entries

Polymers, uses and miscellaneous

microcapsules, contg. immobilized catalysts

Electron exchange catalysts

polymeric microcapsules contg.

Enzymes

immobilized, polymeric microcapsules contg.

Capsules

micro-, polymers, contg. immobilized catalysts

Catalysts and Catalysis

phase-transfer, polymeric microcapsules contg.

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107:142157

Silica-immobilized amine-platinum complexes as hydrosilylation
catalysts.

Ejike, E. N.; Parish, R. V. (Dep. Chem., Univ. Manchester Inst. Sci.

Technol., Manchester M60 1QD, UK). J. Organomet. Chem., 321(1),

135-41 (English) 1987. CODEN: JORCAI. ISSN: 0022-328X.

DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction

Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 22

A simple method was used to assess the efficiency of a variety of

platinum-amine complexes anchored to SiO₂ and of anionic complexes supported on a SiO₂-based ion-exchanger in the catalysis of the hydrosilylation of dec-1-ene by (Me₃SiO)₂Si(H)Me. In all cases, Pt was leached from the support, so that the catalyst became less active on each re-use. A rough correlation between extent of leaching and activity suggested that the effective catalysis was actually occurring homogeneously. The silane was responsible for the leaching.

Keywords

platinum amine silica catalyst hydrosilylation
leaching platinum amine silica catalyst silane
decene hydrosilylation platinum amine silica catalyst

Index Entries

Leaching

of platinum from platinum amine complexes supported on silica,
catalytic activity for hydrosilylation in relation to

Hydrosilylation catalysts

platinum amine complexes supported on silica, platinum leaching
from, activity in relation to

Amines, compounds

platinum complexes, catalysts, for hydrosilylation, effect of platinum
leaching on activity of

7440-06-4, amine complexes

catalysts, for hydrosilylation, platinum leaching from, activity in
relation to

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106:214800

Reactivity in aqueous basic medium of N-acyl 4-piperidones, soluble
and fixed on a polyacrylamide support: hydration and aldolization.
Sola, R.; Brugidou, J.; Taillades, J.; Commeyras, A. (Univ. Sci. Tech.
Languedoc, Montpellier 34060, Fr.). Nouv. J. Chim., 10(8-9), 499-506
(French) 1986. CODEN: NJCHD4. ISSN: 0398-9836. DOCUMENT

TYPE: Journal CA Section: 37 (Plastics Manufacture and Processing)

Section cross-reference(s): 34, 35, 38

Immobilization of 1-acyl-4-piperidone hydration catalysts (for amino
acid manuf. from α -aminonitriles) on acrylamide polymers, did not
affect the hydration equil. of the piperidones significantly. However, the
network structure of crosslinked polyacrylamides suppressed intraresin
trimerization which would result in catalyst deactivation. Intraresin
dimerization was not inhibited by crosslinking. Crosslinking affected
the intraresin aldol formation. The use of crosslinked resins improved
the site isolation of the catalysts.

Keywords

hydration catalyst immobilization acrylamide polymer
aldolization piperidone immobilized catalyst
piperidone catalyst polyacrylamide intraresin reactivity
crosslinked polyacrylamide piperidone intraresin reactivity

Index Entries

Hydration catalysts

acylpiperidones, acrylamide polymer-bound, for amino acid manuf.,
hydration and aldolization of, network structure in relation to

Crosslinking

of acryloylpiperidone polymer catalysts, hydration and aldolization
and catalytic activity in relation to

Amino acids, preparation

prepn. of, polyacrylamide-bound acylpiperidine hydration catalysts

for

Chains, chemical

rigidity of, of acryloylpiperidone polymers, hydration and aldolization in relation to

32161-06-1

catalysts, for hydration of aminonitriles in amino acid manuf.,

hydration and aldolization equil. of, immobilization in

relation to

108454-79-1

108454-79-1, hydrolyzed, aldolized

108454-80-4

108454-80-4, hydrolyzed, aldolized

catalysts, hydration and aldolization equil. of, network structure in

relation to

108490-16-0

108490-17-1

108490-18-2

formation of, in aldolization of acylpiperidone catalysts

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106:196141

Epoxidation with tert-butyl hydroperoxide in the presence of molybdenum peroxide and polymer-immobilized molybdenum peroxide.

Kurusu, Yasuhiko; Masuyama, Yoshiro; Saito, Masao; Saito, Sakuyuki (Fac. Sci. Technol., Sophia Univ., Tokyo 102, Japan). J. Mol. Catal.,

37(2-3), 235-41 (English) 1986. CODEN: JMCADS. ISSN:

0304-5102. DOCUMENT TYPE: Journal CA Section: 27 (Heterocyclic

Compounds (One Hetero Atom))

Immobilization of molybdenum peroxide obtained from the reaction of Mo powder or MoO₃ with H₂O₂ into a chelating polymer (Diaion CR-20) was carried out, and its use as a catalyst for the epoxidn. of olefins with hydroperoxides was examd. The immobilized polymer obtained can be used repeatedly as an epoxidn. catalyst; its activity remains at a const. high level after many repeated usages. The polymer also shows the possibility of regeneration by hydrogen peroxide treatment.

Keywords

epoxidn catalyst polymer support

molybdenum peroxide epoxidn catalyst

butyl hydroperoxide epoxidn olefin

Index Entries

Epoxidation catalysts

molybdenum peroxide and polymer-bound molybdenum peroxide, for olefins

106-24-1

110-83-8, reactions

111-66-0

138-86-3

931-88-4

3899-34-1

7642-04-8

13389-42-9

36004-04-3

epoxidn. of, by Bu hydroperoxide, in the presence of

polymer-bound molybdenum peroxide

57916-98-0

polymers support for molybdenum peroxide catalyst

286-20-4

286-62-4

1195-92-2

1896-62-4
2984-50-1
23024-54-6
28180-70-3
34501-27-4
62960-04-7
prepn. of

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106:39165

Mechanism of fixing of acido complexes of platinum(II) and platinum(IV) on the surface of γ -aluminum oxide modified with inorganic acids.
Tsymbal, T. V.; Doronin, V. P.; Al't, L. Ya.; Duplyakin, V. K. (USSR). 5
Mezhdunar. Simp. po Svyazi mezhdur Gomogen. i Geterogen. Katal.,
Novosibirsk, 15-19 Iyulya, 1986. Dokl., Novosibirsk, 2(Ch 2), 108-17
From: Ref. Zh., Khim. 1986, Abstr. No. 21B4274(Russian) 1986.
DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
Kinetics, and Inorganic Reaction Mechanisms)
Title only translated.

Keywords

alumina immobilized catalyst platinum complex
acido platinum surface complex

Index Entries

Catalysts and Catalysis
platinum acido complex, immobilized on alumina
7440-06-4, acido complexes
alumina-immobilized catalysis in relation to

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106:39164

Hydrogen transfer reactions catalyzed by heterogenized ruthenium(II) complexes attached to the polycarboxylate matrix.
Valentini, Giorgio; Ciecchi, A.; Di Bunio, S.; Braca, Giuseppe; Sbrana, Glauco (USSR). 5 Mezhdunar. Simp. po Svyazi mezhdur Gomogen. i
Geterogen. Katal., Novosibirsk, 15-19 Iyulya, 1986. Dokl., Novosibirsk, 2(Ch 2), 185-203 From: Ref. Zh., Khim. 1986, Abstr. No.
21B4346(Russian) 1986. DOCUMENT TYPE: Journal CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 22
Title only translated.

Keywords

hydrogen transfer ruthenium complex catalyst
polycarbonate support ruthenium 2 complex

Index Entries

Aldehydes, reactions
hydrogen transfer between alcs. and, ruthenium complex catalysts
in
Alcohols, reactions
hydrogen transfer between aldehydes and, ruthenium complex
catalysts in
Catalysts and Catalysis
Hydrogen transfer catalysts
ruthenium (II) polymer-immobilized complexes
19529-00-1
catalysis by polycarbonate-immobilized, in hydrogen transfer

reactions
7440-18-8, uses and miscellaneous
catalysts, immobilized, for hydrogen transfer

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115:227115

Droplet immobilization of biocatalysts.

Vorlop, Klaus Dieter; Remmers, Peter (Fed. Rep. Ger.). Ger. DE

4027218 C1 19 Sep 1991, 5 pp. (Germany) CODEN: GWXXAW.

CLASS: ICM: C12N011-04. ICA: C02F003-08; A62D003-00;

C12C011-00; C12P007-56; C12P013-04; C09C001-48;

C01B031-08; C08J003-12; C08J003-215. ICI: C12N011-04,

C12R001-865; C12P007-06, C12R001-865; C08L029-04.

APPLICATION: DE 90-4027218 24 Aug 1990. DOCUMENT TYPE:

Patent CA Section: 7 (Enzymes) Section cross-reference(s): 16

A method for the immobilization of biol. catalysts (microorganisms, enzymes) in polyvinyl alc. gels is described. The catalyst is mixed with a viscous soln. of polyvinyl alc., and added dropwise to a liq. at a temp. of $<-3^{\circ}$. The frozen droplets are recovered and allowed to warm slowly to -5° to $+5^{\circ}$. Agents for stabilizing, improving elasticity, controlling d., etc., may be added to the soln. Bakers' yeast immobilized in polyvinyl alc. by this method was more active in EtOH fermn. than yeast immobilized in alginates. The application of a protective polyvinyl alc. coating by a two-stream method is described.

Keywords

biochem immobilization polyvinyl alc droplet
yeast immobilization polyvinyl alc droplet

Index Entries

Zeolites, uses and miscellaneous

catalyst adsorbed to, in immobilization of biocatalyst in polyvinyl alc. droplets by flash-freezing of

Microorganism

Enzymes

immobilization in polyvinyl alc. droplets of, by flash-freezing

Immobilization, biochemical

in polyvinyl alc., by flash-freezing of droplets

Yeast

bakers', immobilization in polyvinyl alc. droplets of, by flash-freezing

Glass, oxide

beads, hollow, for control of d. of polyvinyl alc. droplets contg.

biocatalysts

Air

liq., polyvinyl alc. droplet flash-freezing in, for biochem.

immobilization

Gases

liquefied, polyvinyl alc. droplet flash-freezing in, for biochem.

immobilization

56-81-5, uses and miscellaneous

57-50-1, uses and miscellaneous

as stabilizer for polyvinyl alc. droplets contg. biocatalysts

64-17-5, biological studies

fermn. of, with yeast immobilized in polyvinyl alc. droplets

7727-43-7

13463-67-7, biological studies

for control of d. of polyvinyl alc. droplets contg. biocatalysts

9002-89-5

immobilization of enzymes or microorganisms in droplets of,

flash-freezing in

7727-37-9, biological studies

liq., polyvinyl alc. droplet flash-freezing in, for biochem.

immobilization

1335-30-4

zeolites, catalyst adsorbed to, in immobilization of biocatalyst in polyvinyl alc. droplets by flash-freezing of

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115:183801

Preparation of sucrose fatty acid esters using enzymatic hydrolysis of residual alkyl esters.

Marek, Miroslav; Musil, Petr; Capek, Karel; Ranny, Mojmir (Czech.).

Czech. CS 269749 B1 6 Feb 1991, 5 pp. (Czechoslovakia) CODEN:

CZXXA9. CLASS: ICM: C07H013-06. APPLICATION: CS 89-1901

28 Mar 1989. DOCUMENT TYPE: Patent CA Section: 33

(Carbohydrates) Section cross-reference(s): 17, 45

Sucrose fatty acid esters (penta- to octa-), useful as fat substitutes, are prep'd. by transesterification of sucrose (I) with 8-12 mol equiv fatty acid alkyl esters and 0.5-1 equiv fatty acid alkali metal salts at 140-200° and 0.1-1000 Pa in the presence of 0.1-10 wt.% basic catalyst, followed by an enzymic hydrolytic workup. The latter consists of addn. of a 1- to 10-fold (wt.) amt. of H₂O, stirring, optional sepn. of the aq. phase, adjustment of the pH (mixt. or only org. phase) to 4-10, addn. of 0.1-5 wt.% biocatalyst with esterase or lipase activity, hydrolysis at 2-45° to disappearance of alkyl ester, and sepn. of the org. product. For example, 32 g I reacted with 10 equiv Et palmitate, 0.5 equiv K palmitate, and 150 mg KOEt at 150° and 50 Pa over 9 h, followed by aq. diln., addn. of phosphate buffer to pH 7.5, hydrolysis with lipase at 40°, and addnl. workup to give 160 g product contg. 60 wt.% octa-O-palmitoylsucrose and 40 wt.% mixed penta- to hepta-O-palmitoylsucroses.

Keywords

sucrose fatty acid ester

transesterification sucrose alkyl fatty alkanoate

hydrolysis lipase alkyl fatty alkanoate

Index Entries

Transesterification catalysts

basic compds., for sucrose with fatty acid alkyl esters

Saccharomycopsis lipolytica

hydrolysis catalyst, for starting fatty acid alkyl esters in prepn. of sucrose polyesters

Hydrolysis catalysts

lipase or esterase, for fatty acid alkyl ester starting materials from prepn. of sucrose polyesters

Transesterification

of sucrose with fatty acid alkyl esters, enzymic hydrolysis of residual alkyl esters in

Fatty acids, esters

alkyl esters, transesterification of, with sucrose, and enzymic hydrolysis of

Fatty acids, esters

coco, esters, with sucrose, prepn. of, with enzymic hydrolysis of starting esters

Fatty acids, esters

coco, iso-Pr esters, transesterification of, with sucrose, and enzymic hydrolysis of

Fats, preparation

substitutes, sucrose fatty acid esters, enzymic hydrolysis of residual fatty acid alkyl esters in prepn. of

Fatty acids, esters

tallow, Me esters, transesterification of, with sucrose, and enzymic hydrolysis of

Fatty acids, esters
 tallow, esters, with sucrose, prepn. of, with enzymic hydrolysis of
 starting esters
 408-35-5
 2624-31-9
 esterification of alkylpalmitate with sucrose in presence of
 9001-62-1
 9001-62-1, immobilized
 9013-79-0
 hydrolysis catalyst, for starting fatty acid alkyl esters in prepn. of
 sucrose polyesters
 29063-58-9
 29130-29-8
 38884-66-1
 39024-75-4
 prepn. of, with enzymic hydrolysis of starting ester
 57-50-1, fatty acid esters
 prepn. of, with enzymic hydrolysis of starting esters
 57-50-1, reactions
 transesterification of, with fatty acid alkyl esters, enzymic hydrolysis
 of starting esters in
 628-97-7
 2239-78-3
 transesterification of, with sucrose, and enzymic hydrolysis of

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115:30001

Studies on immobilized polymer-bound imidazole-copper(II)
 complexes as catalysts. 3. Immobilization of copper(II) complexes
 of poly(styrene-co-N-vinylimidazole) by grafting on silica and their
 catalysis of oxidative coupling of 2,6-disubstituted phenols.
 Chen, Wei; Boven, Gert; Challa, Ger (Lab. Polym. Chem., Univ.
 Groningen, Groningen 9747 AG, Neth.). Macromolecules, 24(14),
 3982-7 (English) 1991. CODEN: MAMOBX. ISSN: 0024-9297.
 DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic
 High Polymers)
 Cu(II) complexes of N-vinylimidazole-styrene copolymer (I) grafted on
 silica were prepd. and characterized. In a batch process under
 comparable conditions, these complexes were catalytically more active
 for oxidative coupling of 2,6-dimethylphenol than those in which the
 copolymer was immobilized on silica by quaternization or adsorption;
 however, they were 3 times less active than nonimmobilized Cu-I
 complexes, due to nonoptimum complex compn. The silica-grafted
 catalyst showed stable conversion under suitable conditions for at least
 150 h in the oxidative coupling of 2,6-di-tert-butylphenol in a
 continuously stirred tank reactor.

Keywords

catalyst silica grafted styrene vinylimidazole copolymer
 oxidative coupling catalyst methylphenol butylphenol

Index Entries

Polyoxyphenylenes
 prepn. of, silica-vinylimidazole-styrene graft copolymer catalysts for,
 by oxidative coupling
 Reactivity ratio in polymerization
 graft, of styrene and vinylimidazole on silica
 Polymerization
 graft, of styrene and vinylimidazole on silica, in prepn. of
 copper-complex catalysts for oxidative coupling
 Polymerization catalysts
 oxidative coupling, silica-vinylimidazole-styrene graft copolymers,

for dialkylphenols
 7440-50-8, complexes with silica-N-vinylimidazole-styrene graft
 copolymer
 134680-97-0, copper complexes
 catalysts, for oxidative coupling polymn. of dialkylphenols, prepn.
 and activity of
 4906-22-3
 formation of, in oxidative coupling of dialkylphenols with
 silica-vinylimidazole-styrene graft copolymer catalysts
 24938-67-8
 25134-01-4
 25511-60-8
 32130-77-1
 prepn. of, silica-vinylimidazole-styrene graft copolymer catalysts for,
 by oxidative coupling

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115:16060
 Heterogeneous phase-transfer catalysts. II. Thermal analysis of crown
 ethers and crown-contained polymers deposited on solids.
 Loktev, V. F.; Litvak, G. S.; Morozova, I. Yu.; Stoyanova, I. V.;
 Tashmukhamedova, A. K. (Inst. Katal., Novosibirsk, USSR). Izv. Sib.
 Otd. Akad. Nauk SSSR, Ser. Khim. Nauk, (6), 147-51 (Russian) 1990.
 CODEN: IZSKAB. ISSN: 0002-3426. DOCUMENT TYPE: Journal CA
 Section: 66 (Surface Chemistry and Colloids) Section
 cross-reference(s): 22, 67, 78
 Crown ethers and crown-contained polymers deposited on carbon,
 ultradispersed diamond or SiO₂ were studied by thermal anal. in air.
 All samples contg. dibenzo-crown moities possess characteristic
 exothermic peaks at 300-350°.

Keywords

thermal analysis crown ether solid supported
 catalyst phase transfer immobilized crown ether
 polymer crown solid immobilized thermal analysis

Index Entries

Thermal analysis
 of crown ethers, in free or solid-supported forms
 Crown compounds
 ethers, thermal anal. of, in free or solid-supported forms
 Catalysts and Catalysis
 phase-transfer, crown ether-solid support, thermal anal.
 characterization of
 29721-41-3
 68923-69-3
 83564-30-1
 91865-66-6
 134354-51-1
 thermal anal. of
 7440-44-0, properties
 7631-86-9, properties
 7782-40-3, properties
 thermal anal. of crown ethers supported on
 14098-44-3
 14174-09-5
 14187-32-7
 16069-36-6
 17455-13-9
 41758-01-4
 53660-42-7
 53660-43-8

105844-59-5
130390-74-8
130390-76-0
130390-77-1
130390-78-2
134354-52-2
thermal anal. of, on solid supports

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114:205491

Fructose oleate synthesis in a fixed catalyst bed reactor.
Khaled, N.; Montet, D.; Pina, M.; Graille, J. (CIRAD, IRHO, Montpellier 34032, Fr.). Biotechnol. Lett., 13(3), 167-72 (English) 1991. CODEN: BILED3. ISSN: 0141-5492. DOCUMENT TYPE: Journal CA Section: 16 (Fermentation and Bioindustrial Chemistry)
Fructose oleate was produced continuously in a fixed-bed catalytic reactor contg. lipase. The effects of residence time in the reactor, substrate concn., and effluent recycling were studied. A yield of 83% was obtained by recycling the effluent 3 times.

Keywords

fructose oleate manuf lipase

Index Entries

9001-62-1
fructose oleate manuf. with immobilized
119660-03-6
manuf. of, with immobilized lipase

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114:121695

Production of polyhalogen compounds by addition of tetrachloromethane with alkenes using immobilized copper catalysts.
Vcelak, Jaroslav; Hradil, Jiri; Chvalovsky, Vaclav; Svec, Frantisek; Hajek, Milan (Czech.). Czech. CS 267459 B1 6 Jun 1990, 4 pp. (Czechoslovakia) CODEN: CZXXA9. CLASS: ICM: C07C017-28. ICA: C07C019-02. APPLICATION: CS 87-4304 11 Jun 1987. DOCUMENT TYPE: Patent CA Section: 25 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds) Section cross-reference(s): 23, 35
Polyhalides $RCHClCHR_1CCl_3$ ($R = C_3-6$ aliph., alicyclic, or arom.; $R_1 = H, R$) were prepd. by addn. reaction of CCl_4 (10- to 20-fold molar excess) with olefins $RCH:CHR_1$ at 50-80° and 0.1-0.3 MPa in an inert atm. using polymer-bound Cu complexes as catalysts. The polymer matrix is formed from copolymers of styrene or acrylate or methacrylate esters, has 1-40% crosslinking, and contains Cu bound by primary or secondary amino groups. Thus, 0.331 parts of a copolymer of glycidyl methacrylate with 20 wt.% ethylene dimethacrylate, and modified by NH_3 (2.53 mmol NH_2/g , sp. surface 30.2 m^2/g), was stirred with 0.472 parts $CuCl$ in 15 parts MeCN for 4 h at 20°. The polymer was washed and dried to show 1.46 mg equiv Cu/g; in a reaction between CCl_4 and styrene, it gave 25% $PhCHClCH_2CCl_3$ in 2 h. Seven addnl. examples illustrate addnl. catalysts and alkenes.

Keywords

polyhalogen compd
addn tetrachloromethane alkene copper catalyst
polymer copper catalyst addn tetrachloromethane

Index Entries

Alkenes, reactions

addn. reaction of, with tetrachloromethane, polymer-bound copper catalysts for

Addition reaction

of tetrachloromethane with alkenes

Addition reaction catalysts

polymer-bound copper complexes, for tetrachloromethane with alkenes

56-23-5, reactions

addn. reaction of, with alkenes, polymer-bound copper catalysts for

100-42-5, reactions

111-66-0

563-45-1

592-76-7

addn. reaction of, with tetrachloromethane, polymer-bound copper catalysts for

111-40-0, reaction products with glycidyl methacrylate copolymers, copper complexes

7664-41-7, reaction products with glycidyl methacrylate copolymers, copper complexes

7758-89-6, complexes with amino-contg. polymers

9003-70-7, amino-contg., complexes with copper

31743-77-8, reaction products with amines, copper complexes

catalysts, for addn. reaction of tetrachloromethane with alkenes

1070-27-5

18088-13-6

23691-27-2

62103-09-7

prepn. of, via addn. reaction of tetrachloromethane with alkene, polymer-bound copper catalysts for

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113:238944

Correlation between the thermodynamics of extra-coordination of metal porphyrins with additional bases and the catalytic properties of metal porphyrins.

Poluboyarov, V. A.; Potapov, G. P.; Dergaleva, G. A.; Anufrienko, V. F.; Yumatov, V. D.; Okotrub, A. V.; Mazalov, L. N.; Alieva, M. I.; Levanova, S. V. (Syktyvkar. Gos. Univ., Syktyvkar, USSR). Koord. Khim., 16(4), 529-22 (Russian) 1990. CODEN: KOKHDC. ISSN: 0132-344X.

DOCUMENT TYPE: Journal CA Section: 68 (Phase Equilibriums, Chemical Equilibriums, and Solutions) Section cross-reference(s): 35, 67, 69

Detn. of heats and entropies of axial ligand adduct formation for transition metal porphyrin complexes along with x-ray spectroscopy data showed that introduction of the metal ion lowers the electron d. of the highest filled orbital of the P-system of the porphyrin. The ability to lower electron d. increases in the order $Fe^{3+} < Cu^{2+} < Mg^{2+} < VO^{2+} < Ni^{2+}$. The rate of polymn. of acrylamide on immobilized metal porphyrin catalysts decreases in the order $Fe > Cu > VO > Ni$. Hence, the ability of the metal ion to lower electron d. in the porphyrin p-orbitals corresponds to the trend in the decrease of catalytic activity.

Keywords

polymn catalyst transition metal porphyrin

axial ligand coordination metal porphyrin

correlation stability catalytic activity metal porphyrin

Index Entries

Entropy

of addn. reaction, of transition metal porphyrin complexes with axial ligands

Polymerization catalysts

transition metal porphyrin complexes, immobilized on polymer gel, adducts stability correlation with activity of

Heat of addition reaction

coordinative, of transition metal porphyrins with axial ligands

Porphyrins

metal complexes, catalytic properties of, stability of axial ligand

adducts in relation to

Transition metals, compounds

porphyrin complexes, axial ligand coordination and catalytic

properties of

Porphyrins

transition metal complexes, axial ligand coordination and catalytic

properties of

9003-05-8, reaction products with transition metal porphyrin complexes

catalysts, for polymn.

79-06-1, reactions

polymn. of, in presence of immobilized transition metal porphyrin

complex catalysts

19442-29-6

51321-27-8

80319-70-6

80345-78-4

80441-83-4

80753-09-9

93799-99-6

110168-36-0

110168-38-2

114490-56-1

129616-27-9

129616-28-0

129616-29-1

129616-30-4

129616-31-5

129616-32-6

129616-33-7

129616-34-8

129616-35-9

129616-36-0

129616-37-1

129637-40-7

129637-41-8

130038-92-5

130038-93-6

130038-94-7

130151-16-5

130170-27-3

130757-59-4

130855-34-4

thermodn. of formation of

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113:172469

Catalytic activity of gel-immobilized porphyrin complexes of hafnium(IV) and molybdenum(VI) in dehydration of aldoses.

Potapov, G. P.; Krupenskii, V. I.; Alieva, M. I. (Syktyvkar. Gos. Univ., Syktyvka, USSR). Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol., 33(3), 106-8 (Russian) 1990. CODEN: IVUKAR. ISSN: 0579-2991.

DOCUMENT TYPE: Journal CA Section: 33 (Carbohydrates)

Kinetics of dehydration of xylose over Group IVb element porphyrin complexes immobilized on polyacrylamide gels to give furfural were detd. at 100, 110, and 120°.

Keywords

group IVB porphyrin catalyst dehydration xylose
kinetics dehydration xylose group IVB catalyst

Index Entries

Porphyrins

catalysts contg., group IVB elements, for dehydration of xylose

Dehydration catalysts

group IVB-porphyrin complexes, for xylose

Dehydration, chemical

of xylose over group IVB element porphyrin complexes, kinetics of

Kinetics of dehydration

of xylose over group IVB element-porphyrin complexes

Group IVB elements

porphyrin catalysts contg., for dehydration of xylose

58-86-6, reactions

dehydration of, over group IVB element porphyrin complexes,

kinetics of

98-01-1, preparation

formation of, in group IVB-porphyrin catalytic dehydration of xylose

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113:154743

Hydroformylation of propylene catalyzed over polymer-immobilized
chlorobis(triphenylphosphine)rhodium carbonyl. Effect of crosslink
ratio and FTIR study.

Ro, Ki Su; Woo, Seong Ihl (Dep. Chem. Eng., Korea Adv. Inst. Sci.
Technol., Seoul, S. Korea). J. Mol. Catal., 61(1), 27-39 (English) 1990.

CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE: Journal

CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and
Waxes)

RhCl(CO)(PPh₃)₂ (I) was immobilized on 2, 4, and 8% crosslinked
gel-type styrene-divinylbenzene copolymer (II) and 20% crosslinked
macroreticular-type II. The properties of these catalysts were evaluated
in the hydroformylation of propylene. The catalysts immobilized on the
gel-type II could be re-used without loss in activity. The activity was
influenced by the degree of crosslinking, and selectivity
(PrCHO/iso-PrCHO) increased with decreasing crosslinking degree.
FTIR study indicated that I immobilized on 8% crosslinked gel-type II
membrane was unstable, and dicarbonyl species appeared above 373
K. The results of EDAX anal. of polymer beads indicated that the
distribution of elements in the catalyst was influenced by the degree of
crosslinking for the gel-type II.

Keywords

polystyrene supported hydroformylation catalyst
rhodium catalyst hydroformylation propylene

Index Entries

Crosslinking

in styrene-divinylbenzene copolymer supports for rhodium catalysts
for hydroformylation of propylene, selectivity in relation to

Glass temperature and transition

of divinylbenzene-styrene copolymer, crosslinking effect on,
selectivity as support for hydroformylation of propylene in
relation to

Polymer-supported reagents

rhodium, catalysts, for hydroformylation of propylene

Hydroformylation catalysts

rhodium, polymer-supported, for propylene, selectivity of, effect of crosslinking on
13938-94-8
catalysts, for hydroformylation of propylene, polymer-supported
115-07-1, reactions
hydroformylation of, polymer-supported rhodium catalysts for
78-84-2
123-72-8
prodn. of, by hydroformylation of propylene, selectivity of
polymer-supported rhodium catalysts for
603-35-0, uses and miscellaneous
rhodium catalysts contg., for hydroformylation of propylene,
selectivity of polymer-supported
9003-70-7
supports, for rhodium catalysts for hydroformylation of propylene,
crosslink d. effect on

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113:139551

Low-temperature oxidation of phosphine with iron(III) chloride complexes supported on silica gel.
Rakitskaya, T. L.; Novitsyuk, E. D. (Odess. Gos. Univ., Odessa, USSR). Zh. Prikl. Khim. (Leningrad), 63(3), 652-5 (Russian) 1990. CODEN: ZPKHAB. ISSN: 0044-4618. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 59
Kinetic and potentiometric methods were used at 25° to study the oxidn. of PH₃ catalyzed by Fe(III) chloro complexes supported on silica gel in the presence of I⁻. The kinetic results are compared to data obtained during PH₃ oxidn. catalyzed by dissolved complexes. The Cl⁻ concn. was varied in the FeCl₃-LiCl-HClO₄-KI-SiO₂ system used as the catalyst. Max. reaction capacity was obsd. for aquated FeCl₂⁺ or FeCl₃ complexes formed at high Cl⁻ and low H₂O activity. Catalysts prepd. at still lower H₂O/Cl⁻ activity ratios have lower (or no) activity for PH₃ oxidn.

Keywords

silica gel supported iron catalyst

Index Entries

Oxidation catalysts
iron chloro complexes, immobilized on silica gel for low temp.
oxidn. of phosphine
Kinetics of oxidation
of phosphine, on iron(III) chloro complex catalysts immobilized on silica gel
Silica gel, compounds
reaction products, with iron(III) aqua chloro complexes, catalysts for phosphine low-temp. oxidn.
7439-89-6, aqua-chloro complex reaction products with silica gel catalysts, for oxidn. of phosphine at low temp.
7439-89-6, uses and miscellaneous
catalysts, silica gel-supported, for phosphine low-temp. oxidn.
7803-51-2
oxidn. of, at low temp. on iron(III) chloro complexes supported on silica gel

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113:103912

Adsorption of tetraaza-macrocyclic copper(II) and nickel(II) complexes on disperse silicas.
Chuiko, A. A.; Lipkovskaya, N. A.; Kol'chinskii, A. G.; Sil'chenko, S. S.

(Inst. Khim. Poverkh., Kiev, USSR). Ukr. Khim. Zh. (Russ. Ed.), 56(2), 129-33 (Russian) 1990. CODEN: UKZHAU. ISSN: 0041-6045.

DOCUMENT TYPE: Journal CA Section: 66 (Surface Chemistry and Colloids) Section cross-reference(s): 67

Immobilization of Cu(II) and Ni(II) tetraaza macrocyclic ligand complexes on disperse silicas was studied. These complexes are catalysts, electrocatalysts, and redox reagents. Adsorption and desorption isotherms for these complexes were detd. A portion of these complexes is bound irreversibly while the remainder can be desorbed more or less readily. The electronic and ESR spectra of the Cu(II) and Ni(II) complexes in soln. and adsorbed on silica gel are compared.

Keywords

adsorption copper aza macrocycle silica
nickel macrocyclic complex adsorption silica
catalyst macrocycle complex immobilized silica

Index Entries

Silica gel, properties
colloidal, adsorption on, of copper(II) and nickel(II)
tetraazamacrocyclic complexes
Redox reaction catalysts
copper(II) and nickel(II) tetraaza macrocycle complexes,
immobilized on silicas
Adsorption
of copper(II) and nickel(II) tetraaza macrocycle complexes, on
silicas
Desorption
of copper(II) and nickel(II) tetraazamacrocyclic complexes, from
silicas
7440-02-0, tetraazamacrocyclic complexes
7440-50-8, tetraazamacrocyclic complexes
adsorption and desorption of, on silicas
295-37-4, copper(II) and nickel(II) complexes
450-32-8, copper(II) and nickel(II) complexes
37933-61-2, copper(II) and nickel(II) complexes
54622-44-5, copper(II) and nickel(II) complexes
59969-60-7, copper(II) and nickel(II) complexes
63972-19-0, copper(II) and nickel(II) complexes
81001-74-3, copper(II) and nickel(II) complexes
adsorption of, on silicas
7631-86-9, properties
colloidal, adsorption on, of copper(II) and nickel(II)
tetraazamacrocyclic complexes

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112:63626

Current status of the problem of preparing catalysts through the fixing of metal complexes on the surfaces of inorganic supports.

Likhonov, V. A.; Lisitsyn, A. S. (Inst. Katal., Novosibirsk, USSR). Zh. Vses. Khim. O-va. im. D. I. Mendeleeva, 34(3), 340-8 (Russian) 1989.

CODEN: ZVKOA6. ISSN: 0373-0247. DOCUMENT TYPE: Journal;

General Review CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 66

A review on catalyst prepn. by grafting metal complexes onto inorg. supports. 91 Refs.

Keywords

review catalyst immobilized metal complex
inorg support grafted complex review

Index Entries

Coordination compounds
catalysts, immobilized on inorg. supports
Catalysts and Catalysis
metal complex, grafted on inorg. supports

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111:150110

Enzyme biosensor.

Yamaguchi, Hideichiro; Uchida, Naoto; Shimomura, Takeshi (Terumo Corp., Japan). Jpn. Kokai Tokkyo Koho JP 01003552 A2 9 Jan 1989

Heisei, 5 pp. (Japan) CODEN: JKXXAF. CLASS: ICM: G01N027-30.

APPLICATION: JP 87-157851 26 Jun 1987. DOCUMENT TYPE:

Patent CA Section: 9 (Biochemical Methods)

An enzyme sensor for the measurement of redox current (O consumption) due to enzyme reactions consists of a conductor-coated oxygen redn. catalyst layer and an enzyme layer. The oxygen redn. catalyst is Co-porphyrin complex, Co-phthalocyanin complex, etc. The enzyme is immobilized on the oxygen redn. catalyst layer by electrolysis. Construction of a glucose sensor, e.g. for body fluid anal., is given as an example.

Keywords

glucose enzyme sensor
biosensor glucose

Index Entries

Catalysts and Catalysis

Electric conductors

Electrolysis

in enzyme biosensor construction

Electrodes

bio-, enzyme, in biosensor for glucose detn. in body fluid

Porphyrins

cobalt complexes, as oxygen redn. catalyst, in enzyme biosensor

7440-06-4, uses and miscellaneous

7440-44-0, biological studies

7440-57-5, uses and miscellaneous

7782-42-5, uses and miscellaneous

as electroconductor, in enzyme biosensor

574-93-6, cobalt complexes

as oxygen redn. catalyst, in enzyme biosensor

7440-48-4, complexes

as oxygen redn. catalysts, in enzyme biosensor

50-99-7, analysis

detn. of, enzyme sensor for

9001-37-0

immobilized, in biosensor for glucose detn.

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111:64839

Ultrafine gold particles immobilized with oxides of iron, cobalt, or nickel for the catalytic oxidation of carbon monoxide at -70°.

Haruta, M.; Kobayashi, T.; Iijima, S.; Delannay, F. (Gov. Ind. Res. Inst. Osaka, Ikeda 563, Japan). Proc. - Int. Congr. Catal., 9th, Volume 3,

1206-13. Edited by: Phillips, M. J.; Ternan, M. Chem. Inst. Can.: Ottawa, Ont. (English) 1988. CODEN: 56NZA9. DOCUMENT TYPE:

Conference CA Section: 67 (Catalysis, Reaction Kinetics, and

Inorganic Reaction Mechanisms)

Au particles <10 nm in diam., immobilized with α -Fe₂O₃, Co₃O₄, or NiO, were prep'd. by copptn. from an aq. soln. of H₂AuCl₄ and the nitrate of Fe, Co, or Ni and by calcination of the coppts. in air at 300-400°. The ultrafine Au particles were hemispherical in shape and strongly held by the host oxides. In most cases, hemispherical Au crystallites were deposited directing their flat (111) planes toward α -Fe₂O₃ (110), Co₃O₄ (111), and NiO (111) planes. The Au particles with a mean diam. of 4.1 nm immobilized on α -Fe₂O₃ were more electron deficient than evap'd. Au particles of the same size. The ultrafine Au particles immobilized with 3d transition metal oxides were active for the oxidn. of CO even at such a low temp. as -70°.

Keywords

gold supported catalyst oxidn carbon monoxide
iron oxide gold oxidn carbon monoxide
cobalt oxide gold oxidn carbon monoxide
nickel gold catalyst oxidn carbon monoxide
particle size shape supported gold

Index Entries

Oxidation catalysts
gold, supported on various oxides, for carbon monoxide, surface structures and activities of
Kinetics of oxidation
of carbon monoxide and hydrogen, on oxide-supported gold catalysts
Particle size
of gold, supported on various oxides, catalytic activity for oxidn. of carbon monoxide in relation to
Particles
shape of, of gold supported on various oxides, catalytic activity for oxidn. of carbon monoxide in relation to
1308-06-1
1309-37-1, uses and miscellaneous
1313-99-1, uses and miscellaneous
catalysts from gold and, for oxidn. of carbon monoxide, surface structure and activity of
7440-57-5, uses and miscellaneous
catalysts, supported on various oxides, for oxidn. of carbon monoxide, surface structures and activities of
630-08-0, reactions
1333-74-0, reactions
oxidn. of, catalyzed by oxide-supported gold, kinetics of

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111:64804

Heterogenization of homogeneous catalysts on ion exchangers.

Kopylova, V. D. (Mosk. Koop. Inst., Moscow, USSR). Zh. Fiz. Khim., 63(5), 1153-64 (Russian) 1989. CODEN: ZFKHA9. ISSN: 0044-4537.

DOCUMENT TYPE: Journal; General Review CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
A review with 40 refs. on immobilization of homogeneous catalysts on ion exchanger supports. Methods for catalyst prepn. (esp. grafting mixed ligand or mixed metal complexes on ion exchangers and immobilization of clusters) are discussed.

Keywords

review immobilization homogeneous catalyst
ion exchanger heterogeneous catalyst review

Index Entries

Ion exchangers
catalysts supports, for immobilization of metal complexes
Catalysts and Catalysis
supports, metal complexes immobilized on ion exchanger, prepn.
methods for

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111:58296

Isolation of a D-stereospecific aminopeptidase and its use as a catalyst in organic synthesis.

Asano, Yasuhisa; Nakazawa, Akiko; Kato, Yasuo; Kondo, Kiyoshi
(Sagami Chem. Res. Cent., Sagamihara 229, Japan). Angew. Chem.,
101(4), 511-12 (German) 1989. CODEN: ANCEAD. ISSN:
0044-8249. DOCUMENT TYPE: Journal CA Section: 34 (Amino
Acids, Peptides, and Proteins) Section cross-reference(s): 7
Amidation of H-D-Ala-OMe (D-I) with Et₂CHNH₂ in the presence of
Achromobacter-D-alanine aminopeptidase gave amide
H-D-Ala-NHCH₂Et₂ (II) in 98% yield. Amidation of DL-I under similar
conditions gave only 48% II, with no product from L-I. The relative rates
of hydrolysis of several amino acid amides and peptides in the
presence of the enzyme are also given.

Keywords

alanine aminopeptidase alanine amidation
hydrolysis kinetics peptide alanine aminopeptidase

Index Entries

Resolution

of alaninamides with D-alanine aminopeptidase

Amidation

of alanine Me ester with aminopentane in the presence of D-alanine
aminopeptidase

Kinetics of hydrolysis

of amino acid amides with D-alanine aminopeptidase

Amidation catalysts

D-alanine aminopeptidase, for alanine ester with aminopentane

Amides, reactions

amino, hydrolysis of, in the presence of D-alanine aminopeptidase,
kinetics of

Peptides, reactions

D-alanine-contg., hydrolysis of, in presence of D-alanine
aminopeptidase, kinetics of

616-24-0

amidation by, of alanine Me esters, D-alanine
aminopeptidase-catalyzed

13515-97-4

14316-06-4

amidation of, with aminopentane, D-alanine
aminopeptidase-catalyzed

2491-20-5

attempted amidation of, with aminopentane, D-alanine
aminopeptidase-catalyzed

119413-52-4

immobilized, catalyst, for amidation of alanine Me ester with
aminopentane and for hydrolysis of peptide amides

598-41-4

923-16-0

926-78-3

1114-94-9

3997-90-8

5874-89-5

21705-13-5
 35320-22-0
 77286-89-6
 77286-90-9
 104652-77-9
 104714-52-5
 kinetics of hydrolysis of, in the presence of D-alanine
 aminopeptidase
 119337-32-5
 prepn. and kinetics of hydrolysis of, in the presence of D-alanine
 aminopeptidase
 338-69-2
 prepn. of, by hydrolysis of racemic alaninamide in the presence of
 D-alanine aminopeptidase
 20108-77-4
 resoln. of, by hydrolysis in the presence of D-alanine
 aminopeptidase

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110:172751
 Preparation of cycloolefins by ruthenium-catalyzed reduction of
 monocyclic aromatic hydrocarbons.
 Deguchi, Ryoji; Fukuoka, Yohei (Asahi Chemical Industry Co., Ltd.,
 Japan). Jpn. Kokai Tokkyo Koho JP 63243039 A2 7 Oct 1988 Showa,
 5 pp. (Japan) CODEN: JKXXAF. CLASS: ICM: C07C005-11. ICS:
 B01J023-46; B01J023-60; B01J027-053; C07C013-20.
 APPLICATION: JP 87-76255 31 Mar 1987. DOCUMENT TYPE:
 Patent CA Section: 24 (Alicyclic Compounds)
 Cycloolefins, esp. cyclohexene (I), are prepd. by partial redn. of
 monocyclic arom. hydrocarbons with H over a catalyst of Ru colloidal
 particles immobilized on water-insol. metal salts, oxides, or hydroxides
 in the presence of H₂O and ³1 Zn compds. to improve yield. An aq.
 soln. of NaBH₄ was added gradually to an aq. soln. of RuCl₃, the
 resulting dispersion was stirred with ZrO₂ in H₂O, and then filtered to
 give Ru colloidal particles immobilized on ZrO₂. The catalyst, obtained
 above, benzene, H₂O, and ZnSO₄ were autoclaved at 150° under 50
 kg/cm² gage H for 120 min to give 27% I at 42% conversion, vs. 11%
 and 48%, resp., for a control catalyst, prepd. by stirring of an aq. soln.
 of RuCl₃ with ZrO₂, followed by treatment with NaBH₄ and filtration.

Keywords

arom hydrocarbon redn ruthenium catalyst
 cycloolefin
 cyclohexene
 benzene redn ruthenium zinc catalyst

Index Entries

Cycloalkenes
 prepn. of, by partial redn. of monocyclic arom. hydrocarbons
 Reduction catalysts
 zinc compds. and ruthenium colloid immobilized on metal salts or
 oxides or hydroxides, for monocyclic arom. hydrocarbons
 Aromatic hydrocarbons, reactions
 monocyclic, redn. of, cycloolefins from, catalysts for
 7733-02-0
 catalysts contg. ruthenium colloid and, for partial redn. of benzene
 7440-18-8, uses and miscellaneous
 colloidal, catalysts contg. zinc sulfate and, for partial redn. of
 benzene
 71-43-2, reactions
 partial redn. of, cyclohexene from, catalysts for
 110-83-8, preparation

prepn. of, by partial redn. of benzene, catalysts for

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110:50271

Poly(vinyl alcohol) as a substrate for indicator immobilization for fiber-optic chemical sensors.

Zhang, Zhujun; Zhang, Yunke; Ma, Wangbai; Russell, Richard; Shakhsher, Ziad M.; Grant, C. L.; Seitz, W. Rudolf; Sundberg, Donald C. (Dep. Chem., Univ. New Hampshire, Durham, NH 03824, USA).

Anal. Chem., 61(3), 202-5 (English) 1989. CODEN: ANCHAM. ISSN: 0003-2700. DOCUMENT TYPE: Journal CA Section: 79 (Inorganic

Analytical Chemistry)

Cross-linked poly(vinyl alc.) (PVOH) has been evaluated as a substrate for immobilizing indicators used in fiber-optic chem. sensors.

Crosslinking is implemented by adding glutaraldehyde and HCl to a 5 wt. % aq. PVOH soln. The resulting gel is clear and transparent in the visible and UV regions down to about 230 nm. Swelling properties depend on the amts. of glutaraldehyde and HCl. Sensor prep.

involves the following steps: PVOH is reacted with cyanuric chloride, the cyanuric chloride/PVOH conjugate is reacted with indicator, HCl and glutaraldehyde are added to initiate the crosslinking reaction, and before the gel starts to form, a precise vol. of indicator/PVOH conjugate is transferred to the common end of a bifurcated fiber-optic bundle and allowed to solidify in situ. The ability of this procedure to control both the amt. of indicator and the amt. of substate is illustrated by using fluorescein as a pH indicator.

Keywords

indicator immobilization fiber optic sensor
fluorescein immobilization fiber optic pH sensor
polyvinyl alc substrate indicator immobilized sensor
cyanuric chloride reagent fiber optic sensor
hydrochloric acid reagent polyvinyl alc crosslinking
glutaraldehyde reagent polyvinyl alc crosslinking

Index Entries

Optical detectors

based on fiber optics, cross-linked poly(vinyl alc.) as substrates for immobilizing indicators for

pH

detn. of, cross-linked poly(vinyl alc.) as substrate for immobilization of fluoresceinamine in fiber-optic sensors for

Optical fibers

indicators immobilized on, for use as chem. sensors, crosslinked poly(vinyl alc.) as substrate for

7647-01-0, uses and miscellaneous

as catalyst, in crosslinking poly(vinyl alc.) as substrate for immobilizing indicators used in fiber-optic chem. sensor

9002-89-5

cross-linked, as substrate for immobilizing indicators in fiber-optic chem. sensors

111-30-8

in crosslinking poly(vinyl alc.) as substrate for immobilizing indicators used in fiber-optic chem. sensors

3326-34-9

in pH fiber-optic sensors, cross-linked poly(vinyl alc.) as substrate for immobilization of

12408-02-5, unspecified

pH, detn. of, cross-linked poly(vinyl alc.) as substrate for immobilization of fluoresceinamine in fiber-optic sensors

for

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109:188856

Immobilized biocatalysts in the food industry.
 Setzermann, Uwe (Humboldt-Univ., Berlin, Ger. Dem. Rep.).
 Lebensmittelindustrie, 35(3), 103-6 (German) 1988. CODEN:
 LEINAQ. ISSN: 0024-0028. DOCUMENT TYPE: Journal; General
 Review CA Section: 17 (Food and Feed Chemistry)
 A review with no refs. (bibliog. available from the author) covering
 immobilization of enzymes, and plant, animal, and microbial cells,
 carriers, and uses of bioreactors in food processing.

Keywords

review food processing bioreactor

Index Entries

Food

processing of, bioreactors for, catalyst immobilization for
 Reactors
 biocatalytic, for food processing, catalyst immobilization for

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109:38389

Immobilized tris(2,2'-bipyridyl)ruthenium(II) complexes as
 photosensitizers for water photolysis.
 Nussbaumer, Walter; Gruber, Heinrich; Greber, Gerd (Inst. Chem.
 Technol. Organ. Stoffe, Tech. Univ. Wien, Vienna 1060, Austria).
 Makromol. Chem., 189(5), 1027-33 (German) 1988. CODEN:
 MACEAK. ISSN: 0025-116X. DOCUMENT TYPE: Journal CA
 Section: 35 (Chemistry of Synthetic High Polymers) Section
 cross-reference(s): 38
 Crosslinked polymers contg. pendant tris(bipyridyl)ruthenium (II)
 complexes (Ru(bipy)₃²⁺) were synthesized and examd. as sensitizers
 for the light-induced formation of H in the heterogeneous system
 H₂O/immobilized Ru(bipy)₃²⁺/EDTA/Pt. H generation rates of 0.037
 mL/h were obtained with Ru(bipy)₃²⁺-complexes immobilized with
 spacer groups onto hydrophilic carriers based on sucrose
 methacrylates as well as hydrophobic carriers based on crosslinked
 poly(4-aminostyrene), whereas carrier-bound complexes without
 spacer gave lower efficiencies in H prodn. The H generation rates
 were linear for more than 8 days.

Keywords

ruthenium polymer water photolysis catalyst
 polysucrose methacrylate ruthenium complex
 polyaminostyrene ruthenium complex

Index Entries

Polymer-supported reagents

catalysts, bipyridine ruthenium complexes, for photolysis of water
 Photolysis catalysts
 polymer-bound bipyridine ruthenium complexes, for water
 10025-99-7
 catalysts, contg. polymer-bound bipyridine ruthenium complexes,
 for photolysis of water
 7732-18-5, reactions
 photolysis of, catalysts for, polymer-bound bipyridine ruthenium
 complexes as
 7440-18-8, polymer-bound bipyridine complexes
 24936-54-7, reduced, reaction products with

(ethoxycarbonylpropyl)methylbipyridine, ruthenium complexes
 72460-28-7, reaction products with sucrose methacrylate
 homopolymer, ruthenium complexes
 77931-80-7, reaction products with bipyridine derivs., ruthenium
 complexes
 114527-29-6, reaction products with poly(aminostyrene), ruthenium
 complexes
 115373-31-4, reaction products with sucrose methacrylate
 homopolymer, ruthenium complexes
 prepn. of, as catalyst for photolysis of water
 1333-74-0, preparation
 prepn. of, by photolysis of water, catalysts for, polymer-bound
 bipyridine ruthenium complexes as

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108:38473

Catalytic activity of copper(II) complexes of immobilized
 'polystyrene-bound 4-(N,N-dimethylamino)pyridine' for the oxidative
 coupling of 2,6-disubstituted phenols.
 Koning, C. E.; Brinkhuis, R.; Wevers, R.; Challa, G. (Lab. Polym.
 Chem., State Univ. Groningen, Groningen 9747 AG, Neth.). Polymer,
 28(13), 2310-16 (English) 1987. CODEN: POLMAG. ISSN:
 0032-3861. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of
 Synthetic High Polymers)
 Polystyrene-bound 4-(N,N-dimethylamino)pyridine-copper (I) catalysts
 for the oxidn. of 2,6-disubstituted phenols were immobilized by grafting
 or by partial adsorption on silica and by crosslinking with 2%
 divinylbenzene. The most active immobilized catalyst was the most
 flexible, i.e., the grafted one, which however was still 6 times less active
 than unbound linear I. The less extended conformation of the adsorbed
 polymeric catalyst exhibited a significantly lower activity. For the
 crosslinked catalyst, indications were obtained that diffusional
 limitations occur.

Keywords

polystyrene pyridine copper polymn catalyst
 phenol polymn catalyst polystyrene supported

Index Entries

Polymer-supported reagents
 copper complexes, as oxidative polymn. catalysts for disubstituted
 phenols
 Polyoxyphenylenes
 prepn. of, copper complexes of polystyrene derivs. as catalysts for
 Polymerization catalysts
 oxidative, copper complexes of polystyrene derivs., for
 disubstituted phenols
 Kinetics of polymerization
 oxidative, of disubstituted phenols, in presence of copper
 complexes of polystyrene derivs.
 7440-50-8, complexes with polystyrene derivs.
 9003-70-7, chloromethylated, reaction products with
 benzylmethylaminopyridine, copper complexes
 26222-40-2, copper complexes
 51336-06-2, reaction products with crosslinked chloromethylated
 polystyrene, copper complexes
 106444-42-2, copper complexes
 112436-82-5, copper complexes
 catalysts, for oxidative polymn. of disubstituted phenols, activity of
 128-39-2
 576-26-1
 oxidative polymn. of, kinetics of, in presence of copper complexes

of polystyrene derivs.
24938-67-8
25134-01-4
prepn. of, catalysts for

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107:197457

Studies of immobilized vanadium-phosphorus/silica catalysts.
Zazhigalov, V. A.; Zaitsev, Yu. P.; Belousov, V. M.; Parlitz, B.; Hanke, W.; Oehlmann, G. (Inst. Phys. Chem., Kiev 252028, USSR). React. Kinet. Catal. Lett., 32(1), 209-14 (English) 1986. CODEN: RKCLAU. ISSN: 0304-4122. DOCUMENT TYPE: Journal CA Section: 23 (Aliphatic Compounds) Section cross-reference(s): 67
The simultaneous immobilization of vanadium and phosphorus ions increases the activity and selectivity of vanadium-contg. aerosils in butane oxidn. The catalytic properties are dependent on the formation of mixed oxide surface V-P/SiO₂ clusters having optimal acid-base characteristics.

Keywords

immobilized vanadium phosphorus silica
oxidn butane vanadium phosphorus silica
aerosil oxidn catalyst

Index Entries

Oxidation catalysts
phosphorus-vanadium pentoxides on silica, for butane or ethanol
1314-56-3, uses and miscellaneous
1314-62-1, uses and miscellaneous
catalysts contg., for oxidn. of butane or ethanol
64-19-7, preparation
75-07-0, preparation
formation of, from ethanol oxidn., catalysts for
108-31-6, preparation
formation of, from oxidn. of butane, catalysts for
64-17-5, reactions
106-97-8, reactions
oxidn. of, catalysts for

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107:141954

Atomic and molecular clusters in membrane mimetic chemistry.
Fendler, Janos H. (Dep. Chem., Syracuse Univ., Syracuse, NY 13244-1200, USA). Chem. Rev., 87(5), 877-99 (English) 1987. CODEN: CHREAY. ISSN: 0009-2665. DOCUMENT TYPE: Journal; General Review CA Section: 66 (Surface Chemistry and Colloids) Section cross-reference(s): 6, 67, 77
This review is focused on novel chemistries developed by the use of surfactant assembly incorporated at. and mol. clusters. Aq. micelles, reversed micelles, microemulsions, vesicles, polynd. vesicles, monolayers, deposited organized multilayers [Langmuir-Blodgett (LB) films], and bilayer (black) lipid membranes (BLMs) are the host surfactant assemblies for the clustered particles. Controllable sized cryst. and amorphous materials, metals, catalysts, magnetic substances, and semiconductors are the clustered particles considered. 147 Refs.

Keywords

review membrane mimetic chem
atomic cluster vesicle immobilized review

mol cluster vesicle immobilized review
 micelle stabilized particle review
 vesicle stabilized particle review
 microemulsion stabilized particle review
 lipid black membrane review
 catalyst stabilized micelle review
 semiconductor stabilized micelle review
 magnetic colloid dispersion review
 Langmuir Blodgett film review

Index Entries

Ferrofluids
 at. and mol. clusters in membrane mimetic chem. in relation to
 Lipids, uses and miscellaneous
 black membranes from
 Clusters
 in membrane mimetic chem.
 Size effect
 membrane mimetic chem. and
 Catalysts and Catalysis
 micelle-solubilized
 Membranes
 mimetic chem. of
 Micelles
 solubilized clusters in
 Amorphous substances
 Magnetic substances
 Semiconductor materials
 Metals, properties
 solubilized clusters, in microemulsion or micelle systems
 Films
 Langmuir-Blodgett
 Emulsions
 micro-, solubilized clusters in

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106:122038

Continuous determination of solute concentrations in flowing solutions.
 Moriizumi, Toyoe; Takatsu, Ichiro (NOK Corp., Japan). Jpn. Kokai
 Tokkyo Koho JP 62002150 A2 8 Jan 1987 Showa, 5 pp. (Japan)
 CODEN: JKXXAF. CLASS: ICM: G01N027-28. ICA: G01N035-08.
 APPLICATION: JP 85-142003 28 Jun 1985. DOCUMENT TYPE:
 Patent CA Section: 47 (Apparatus and Plant Equipment) Section
 cross-reference(s): 7, 45, 79, 80
 A concn. of solutes in a flowing fluid is continuously detd. by bumping
 the flow at a sensor position in a bent ($>50^\circ$) channel between 2 walls
 for increase of renewal of fluid around a concn.-sensing area. A sensor
 for detn. of glucose concn. was prepd. by setting Pt and Ag electrodes
 at the bottom of the bumped bottom across an immobilized glucose
 oxidase membrane. A soln. contg. glucose was passed through the
 bumped channel having the sensor applied with 0.6 V across the
 electrode. The glucose was oxidized by a catalytic effect of the
 membrane to form gluconolactone and H_2O_2 . Various enzyme
 membranes were employed depending on chems. to be detd. in liq.
 solns.

Keywords

solute concn detector enzyme membrane
 etching crystal sensor element
 catalyst membrane solute concn sensor

Index Entries

Membranes

enzymes, immobilized, for solute sensors

Electrodes

for solute sensors, flow cells in relation to

Enzymes

membrane contg. and detn. of concn. of, flow cell for

Amino acids, analysis

sensor elements for detn. of, membranes and flow cells for

Solutes

Inorganic compounds

sensors for, flow cell and membrane-electrode unit for

Etching

anisotropic, of silicon crystal, for solute sensor flow cells

9000-89-9

9001-05-2

9001-22-3

9001-37-0

9001-57-4

9001-62-1

9001-74-5

9002-13-5

9003-99-0

9028-76-6

9031-76-9

membrane, immobilized, for solute sensors

50-99-7, uses and miscellaneous

57-13-6, uses and miscellaneous

57-50-1, uses and miscellaneous

57-88-5, uses and miscellaneous

61-33-6, uses and miscellaneous

64-17-5, uses and miscellaneous

69-93-2, uses and miscellaneous

7722-84-1, uses and miscellaneous

29883-15-6

sensor elements for detn. of, membranes and flow cells for

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106:67145

Cyclic lactones.

Kakiuchi, Hiroshi; Tomoi, Masao (Mitsubishi Chemical Industries Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61200981 A2 5 Sep 1986

Showa, 4 pp. (Japan) CODEN: JKXXAF. CLASS: ICM: C07D313-00.

APPLICATION: JP 85-39678 28 Feb 1985. DOCUMENT TYPE:

Patent CA Section: 27 (Heterocyclic Compounds (One Hetero Atom))

Lactones were prepd. by intramol. cyclocondensation of aliph.

carboxylic acids contg. leaving groups in the presence of cyclic

amidines. Thus, 11-bromoundecanoic acid was stirred with

1,8-diazabicyclo[5.4.0]undec-7-ene immobilized to chloromethylated

crosslinked polystyrene in toluene at room temp. to 80° for 16 h to give

20% 11-undecanolide.

Keywords

lactone

carboxylic acid intramol cyclocondensation

amidine immobilized polymer cyclocondensation catalyst

Index Entries

Lactones

cyclic, prepn. of, by intramol. cyclocondensation of aliph. carboxylic acids

Lactonization

intramol., of aliph. carboxylic acids, cyclic lactones from
 6674-22-2
 catalyst, for intramol. cyclocondensation of aliph. carboxylic acids
 676-26-6
 2834-05-1
 56523-59-2
 106615-47-8
 intramol. cyclocondensation of
 106-02-5
 673-02-9
 1725-03-7
 3537-83-5
 prepn. of

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106:39140

Metal complex catalysts with organic dye ligands which are
 homogeneous and immobilized on supports.
 Khidekel, M. L.; Bulatov, A. V.; Lobach, A. S.; Chepaikin, E. G. (USSR).
 5 Mezhdunar. Simp. po Svyazi mezhdur Gomogen. i Geterogen. Katal.,
 Novosibirsk, 15-19 Iyulya, 1986. Dokl., Novosibirsk, 2(Ch 2), 204-26
 From: Ref. Zh., Khim. 1986, Abstr. No. 21B4272 (Russian) 1986.
 DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction
 Kinetics, and Inorganic Reaction Mechanisms)
 Title only translated.

Keywords

immobilized catalyst metal dye complex

Index Entries

Nitro compounds
 Alkenes, reactions
 hydrogenation of, metal dye complex catalysts for
 Dyes
 metal complexes, catalysts, homogeneous or supported
 Exchange reaction catalysts
 metal dye complexes, for hydrogen with water
 Catalysts and Catalysis
 Hydrogenation catalysts
 metal dye complexes, homogeneous or supported
 7732-18-5, reactions
 exchange reaction of hydrogen with, metal dye complex catalysts
 for
 1333-74-0, reactions
 exchange reaction of, with water, metal dye complex catalysts for

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115:287717

Complexation and adsorption equilibria on the surface of unmodified
 and modified silicas.
 Tertykh, V. A.; Yanishpol'skii, V. V. (Inst. Khim. Poverkhn., Kiev, USSR).
 Teor. Eksp. Khim., 27(3), 361-70 (Russian) 1991. CODEN: TEKHA4.
 ISSN: 0497-2627. DOCUMENT TYPE: Journal; General Review CA
 Section: 66 (Surface Chemistry and Colloids) Section
 cross-reference(s): 63, 67, 68
 A review on correlations between complexation and adsorption consts.
 on modified silica surfaces and parameters assocd. with various
 applications of these sorbents (liq. chromatog., catalysis, concn. of ions
 or org. compds., prolonging and controlling the evolution of drugs, etc.).
 About 30 refs.

Keywords

review silica modified surface complexation adsorption
catalyst silica surface complex review
drug controlled release silica sorbent review

Index Entries

Silica gel, compounds
adsorption and surface complexation on, applications in relation to
Formation constant and Stability constant
of surface complexes, on modified silicas
Adsorption
on silica modified surfaces
Chromatography, column and liquid
parameters of, correlation with surface complexation consts. on
silicas
Catalysts and Catalysis
silica-immobilized
Pharmaceutical dosage forms
controlled-release, using modified silica sorbents

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115:233976

Preparation, properties and application of reagents immobilized on
polymeric supports.
Sherrington, D. C. (Univ. Strathclyde, Glasgow, UK). Usp. Khim., 60(7),
1494-512 (Russian) 1991. CODEN: USKHAB. ISSN: 0042-1308.
DOCUMENT TYPE: Journal; General Review CA Section: 38 (Plastics
Fabrication and Uses) Section cross-reference(s): 67
A review with 35 refs. on prepn. and applications of polymer-supported
catalysts (acid-base, metal complexes, etc.) and highly selective
chelating ligands.

Keywords

review polymer supported catalyst
chelating ion exchange resin review

Index Entries

Polymer-supported reagents
catalysts, prepn. and properties and applications of
Catalysts and Catalysis
polymer-supported, prepn. and properties and applications of
Ion exchangers
chelating, polymer-supported, prepn. and properties and
applications of

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114:185983

Peptide synthesis catalyzed by modified α -chymotrypsin in low-water
organic media.
Gaertner, H.; Watanabe, T.; Sinisterra, J. V.; Puigserver, A. (Cent.
Biochim. Biol. Mol., CNRS, Marseille 13402, Fr.). J. Org. Chem.,
56(9), 3149-53 (English) 1991. CODEN: JOCEAH. ISSN: 0022-3263.
DOCUMENT TYPE: Journal CA Section: 34 (Amino Acids, Peptides,
and Proteins) Section cross-reference(s): 9
Enzyme-catalyzed synthesis of peptide bonds in org. solvents has been
investigated by using α -chymotrypsin either modified with poly(ethylene
glycol) or immobilized on different supports, in order to find out the
importance of water content in the reaction. High yields of peptide
synthesis were obtained whatever the type of enzyme deriv. used. By

varying the type of support, a modification in the enzyme environment was obsd. and resulted in a significant increase in the reaction yield when nucleophiles with poor affinity for the enzyme were used. Since org. solvents also affected substrate specificity with respect to the donor ester, a general methodol. was proposed for the enzymic synthesis of peptides in low-water org. media.

Keywords

chymotrypsin immobilized catalyst peptide synthesis
org solvent chymotrypsin peptide synthesis

Index Entries

Peptides, preparation

prepn. of, by coupling catalyzed by modified chymotrypsin in org.
solvents

1676-81-9

3705-42-8

7244-67-9

82933-21-9

attempted peptide coupling of, with phenylalanine amide catalyzed
by poly(ethylene glycol)-modified chymotrypsin in org.

solvent

25529-46-8

71448-22-1

130970-34-2

131684-51-0

attempted prepn. of, by peptide coupling reaction catalyzed by
poly(ethylene glycol)-modified chymotrypsin in org. solvent

9004-74-4, cyanuric chloride-activated

9012-36-6

25322-68-3

chymotrypsin modified with, for catalysis of peptide coupling in org.
solvent

3483-82-7

peptide coupling of, with amino acid amides catalyzed by modified
chymotrypsin in org. solvent

598-41-4

636-65-7

2788-83-2

4985-46-0

5241-58-7

6791-49-7

32388-19-5

49705-99-9

peptide coupling of, with benzoyltyrosine Et ester catalyzed by
modified chymotrypsin in org. solvent

971-21-1

2361-96-8

2382-80-1

17039-40-6

peptide coupling of, with phenylalanine amide catalyzed by
poly(ethylene glycol)-modified chymotrypsin in org. solvent

9004-07-3

poly(ethylene glycol)-modified, catalysts, for peptide coupling
reaction in org. solvent

7369-86-0

119153-83-2

119153-84-3

129678-28-0

129678-29-1

131684-49-6

131684-50-9

131704-13-7

prepn. of, by peptide coupling reaction catalyzed by modified
chymotrypsin in org. solvent

24809-25-4

66127-60-4

119206-29-0

119237-54-6

prepn. of, by peptide coupling reaction catalyzed by poly(ethylene
glycol)-modified chymotrypsin in org. solvent

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114:104025

Oligomerization of propylene on a nickel catalytic system immobilized
in the industrial rubber volume.

Popova, V. G.; Sofronova, O. V.; Vashchurin, A. S.; Amirova, N. T.
(USSR). Sb. Nauch. Tr. VNII Organ. Sintez, (27), 10-17 From: Ref.

Zh., Khim. 1990, Abstr. No. 20N15(Russian) 1990. DOCUMENT

TYPE: Journal CA Section: 39 (Synthetic Elastomers and Natural
Rubber)

Title only translated.

Keywords

propylene oligomerization nickel catalyst

Index Entries

Polymerization catalysts

oligomerization, nickel, for propylene

7440-02-0, uses and miscellaneous

catalysts, for oligomerization of propylene

9003-07-0

oligomeric, prepn. of, nickel catalysts for

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113:116643

Catalysis by flavin-containing polycations, immobilized in
polyelectrolyte complexes with poly(methacrylic acid).

Schoo, H. F. M.; Challa, G. (Lab. Polym. Chem., State Univ. Groningen,
Groningen 9747 AG, Neth.). Polymer, 31(8), 1559-63 (English) 1990.

CODEN: POLMAG. ISSN: 0032-3861. DOCUMENT TYPE: Journal

CA Section: 38 (Plastics Fabrication and Uses) Section

cross-reference(s): 7, 45

Polystyrene-supported cations contg. pendant flavin groups were
immobilized in polyelectrolyte complexes (PECs) with poly(methacrylic
acid). The catalytic activity of the flavin was detd. by measuring the rate
of oxidn. of 1-benzyl-1,4-dihydronicotinamide in water-rich medium, as
a function of the degree of substitution of the polycation by quaternary
ammonium groups (b) and as a function of the ratio in which the
polycation and polyanion were mixed. The influence of complexation
on the catalytic activity of the flavin moiety increased with b, and was
pos. Flavin-contg. PECs could be used many times in batchwise
reactions and showed good stability in continuous expts. in a stirred
tank reactor and as a sandwich membrane.

Keywords

flavin polystyrene supported oxidn catalyst

polymethacrylic acid complex flavin

nicotinamide deriv oxidn flavin

Index Entries

Polymer-supported reagents

flavin, poly(methacrylic acid)-complexed, catalysts, for oxidn. of
benzylidihydronicotinamide
Oxidation catalysts
flavin, supported on poly(methacrylic acid)-complexed polystyrene
triethylammoniomethyl derivs., for
benzylidihydronicotinamide
Kinetics of oxidation
of benzylidihydronicotinamide, in presence of flavin catalysts
supported on poly(methacrylic acid)-complexed polystyrene
triethylammoniomethyl derivs.
952-92-1
oxidn. of, using polystyrene-supported flavin poly(methacrylic acid)
complex catalysts
25087-26-7, complexes with flavin
32561-90-3, complexes with poly(methacrylic acid)
polystyrene-supported, oxidn. catalysts, for
benzylidihydronicotinamide
9003-53-6, triethylammoniomethyl derivs., complexes with
poly(methacrylic acid)
supports, for flavin oxidn. catalysts for benzylidihydronicotinamide

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112:167792

Electrocatalytical reduction of carbon dioxide on polypyrrole-modified
electrodes with an immobilized complex of nickel and
1,4,8,11-tetraazacyclotetradecane.

Zhalko-Titarenko, O. V.; Lazurskii, O. A.; Pokhodenko, V. D. (Inst.
Khim. im. Pisarzhevskogo, Kiev, USSR). Teor. Eksp. Khim., 26(1),
46-51 (Russian) 1990. CODEN: TEKHA4. ISSN: 0497-2627.

DOCUMENT TYPE: Journal CA Section: 72 (Electrochemistry) Section
cross-reference(s): 36, 67

The electrochem. polymn. of pyrrole was carried out in a presence of Ni
complexes with 1,4,8,11-tetraazamacrocyclotetradecane. The surface
of Pt electrode was modified by polypyrrole contg. Ni (cyclam) Cl₂
complex. The redn. of CO₂ was investigated on modified electrodes.
The modified electrode had a high catalytic activity. A potential and
velocity of the catalytic process differed insignificantly from values for a
homogeneous catalysis and an amt. of catalytic cycles increased
significantly.

Keywords

polymn electrochem pyrrole platinum electrode
nickel cyclam complex polypyrrole
carbon dioxide electroredn modified electrode
catalytic redn carbon dioxide

Index Entries

Reduction, electrochemical
of carbon dioxide on polypyrrole with nickel-cyclam complex
Electric conductivity and conduction
of polypyrrole, prepn. conditions effect on
Polymerization
electrochem., of pyrrole in presence of nickel-cyclam complex
Reduction catalysts
electrochem., polypyrrole with nickel-cyclam complex, for carbon
dioxide
7791-03-9
12068-03-0
elec. cond. of polypyrrole prepd. by polymn. in soln. contg.
429-42-5
electrochem. polymn. of pyrrole in acetonitrile contg., in presence of
nickel-cyclam complex

7440-02-0, cyclam complexes
 electrochem. polymn. of pyrrole in presence of
 75-05-8, uses and miscellaneous
 electrochem. polymn. of pyrrole in presence of nickel-cyclam
 complex in soln. of
 7440-06-4, uses and miscellaneous
 7782-42-5, uses and miscellaneous
 electrode, pyrrole polymn. on, in presence of nickel-cyclam complex
 30604-81-0
 modified with nickel-cyclam complex, as redn. catalysts, for carbon
 dioxide
 109-97-7
 polymn. of, electrochem., in presence of nickel-cyclam complex
 59644-93-8
 polypyrrole modified with, as redn. catalyst, for electrochem. redn.
 of carbon dioxide

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112:61543

Porous spherical glass beads, and their manufacture.

Nakamura, Ichiro (Sekisui Chemical Co., Ltd., Japan). Jpn. Kokai

Tokkyo Koho JP 01167260 A2 30 Jun 1989 Heisei, 5 pp. (Japan)

CODEN: JKXXAF. CLASS: ICM: C03C011-00. APPLICATION: JP

87-327721 23 Dec 1987. DOCUMENT TYPE: Patent CA Section: 57

(Ceramics)

The title beads contain at least SiO₂ and 10-70 mol% ZrO₂, and have
 av. particle diam. 1-100 μ m and av. pore diam. 100-400 Å. The beads
 are prep'd. by hydrolyzing alkoxides of Si and Zr, or reacting a Zr
 alkoxide with an acid-catalyzed hydrolyzate of an Si alkoxide
 dispersion, catalytically hydrolyzing the reaction product with alkali to
 form a gel, sepg. the powder from the gel, and heat-treating the powder
 at 400-900°. Preferably, the powder is sepd. by spray drying. These
 beads are resistant to chems., esp. alkalies, and are useful as catalyst
 supports, adsorbents, fillers for liq. chromatog., etc.

Keywords

silica zirconia porous glass bead
 adsorbent silica zirconia porous bead
 liq chromatog filler bead
 catalyst support silica zirconia bead

Index Entries

Adsorbents

silica-zirconia porous glass bead manuf. for, by sol-gel process

Chromatography, column and liquid

adsorbents, silica-zirconia porous glass bead manuf. for, by sol-gel
 process

Glass, oxide

beads, porous, zirconium silicate, manuf. of, by sol-gel process

Enzymes

immobilized, silica-zirconia porous glass bead manuf. for, by
 sol-gel process

Catalysts and Catalysis

supports, silica-zirconia porous glass bead manuf. for, by sol-gel
 process

1314-23-4, uses and miscellaneous

glass beads contg. silica and, sol-gel process for manuf. of

7631-86-9, uses and miscellaneous

glass beads contg. zirconia and, sol-gel process for manuf. of

78-10-4

23519-77-9

hydrolysis of, in porous silica-zirconia porous glass beads manuf.

by sol-gel process

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112:59151

Porous carbon microspheres, and their manufacture.

Ishikawa, Toshiisa; Teranishi, Haruo; Yamazoe, Hiroshi; Yokoyama, Akira; Kawai, Takanobu; Pponda, Hidemasa (Nippon Carbon Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01081890 A2 28 Mar 1989 Heisei, 8 pp. (Japan) CODEN: JKXXAF. CLASS: ICM: C10C003-02.

ICS: C10C003-08. ICA: C01B031-00; G01N030-48. APPLICATION: JP 87-237268 24 Sep 1987. DOCUMENT TYPE: Patent CA Section: 49 (Industrial Inorganic Chemicals)

Mesophase pitch, having controlled quinoline-insol. components, is ground, screened, dispersed in a medium having b.p. higher than the softening point (T) of the pitch, the mixt. is heated to a temp. higher than T and stirred to emulsify the mixt. and to form spheres, and the spheres are treated with a solvent, e.g., quinoline, to remove sol. components to obtain meso-C microspheres having porous surface. The spheres are useful as packing for chromatog. columns, catalyst supports, for enzyme immobilization, and as adsorbents, and have higher mech. strength than beads of activated C.

Keywords

mesophase pitch carbon microsphere
chromatog column packing microsphere
enzyme immobilization microsphere
adsorbent microsphere
catalyst support microsphere

Index Entries

Adsorbents

mesocarbon microspheres with porous surfaces for, manuf. of
Chromatography, column and liquid
packing for, mesocarbon microspheres with porous surfaces,
manuf. of

Enzymes

immobilized, mesocarbon microspheres with porous surfaces for,
manuf. of

Pitch

mesophase, mesocarbon microspheres with porous surface
manuf. from

Catalysts and Catalysis

supports, mesocarbon microspheres with porous surfaces for,
manuf. of

7440-44-0, properties

meso-, microspheres, with porous surfaces, manuf. of, from
mesophase pitch

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111:216267

Kinetics of the esterification of methacrylic acid with ethylene oxide in the presence of ferric chloride immobilized on polymer support.

Ivanova, P.; Eliyas, A.; Stamenova, R.; Petrov, L.; Tsvetanov, C. (Cent. Lab. Polym., Sofia 1040, Bulg.). Appl. Catal., 53(1), 41-52 (English) 1989. CODEN: APCADI. ISSN: 0166-9834. DOCUMENT TYPE:

Journal CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes) Section cross-reference(s): 37

The kinetics esterification of the methacrylic acid (I) with ethylene oxide (II), catalyzed by polymer-supported FeCl₃, was studied in a static reactor under quasi-stationary conditions. The temp. interval 50-90° was investigated and the I-II mole ratio was varied from 2:1 to 1:10.

The catalyst amt. was varied 1-10 wt.%. A kinetic model of the reaction was proposed. The model corresponded to a single-site Langmuir-Hinshelwood mechanism. The rate-limiting step was a surface reaction. Optimum conditions for the esterification was 80°, 1:1 I-II mole ratio and 1-3 wt.% catalyst.

Keywords

methacrylic acid esterification kinetics
hydroxyethylation methacrylic acid optimization
ferric chloride catalyst esterification

Index Entries

Polymer-supported reagents
ferric chloride, catalysts, for esterification of methacrylic acid with ethylene oxide
Esterification catalysts
Hydroxyethylation catalysts
ferric chloride, polymer-supported, for methacrylic acid with ethylene oxide
Process optimization
of esterification, of methacrylic acid, in presence of
polymer-supported ferric chloride catalysts
Kinetics of esterification
Kinetics of hydroxyethylation
of methacrylic acid with ethylene oxide, in presence of
polymer-supported catalysts
Esterification
Hydroxyethylation
of methacrylic acid, with ethylene oxide, mechanism of
7705-08-0, uses and miscellaneous
catalysts, polymer-supported, for esterification of methacrylic acid with ethylene oxide, kinetics in relation to
79-41-4, reactions
esterification of, with ethylene oxide, kinetics of, in presence of
polymer-supported ferric chloride catalysts
75-21-8, reactions
methacrylic acid esterification with, kinetics of, in presence of
polymer-supported ferric chloride catalysts
868-77-9
prodn. of, from ethylene oxide and methacrylic acid, kinetics of, in presence of polymer-supported ferric chloride catalysts
25232-41-1
supports, for ferric chloride catalysts, for esterification of methacrylic acid with ethylene oxide, kinetics in relation to

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111:77138

Organic syntheses. VII. Immobilized catalysts and reagents.
Pantini, Giovanni (Italy). Tecnol. Chim., 9(4), 106-51 (Italian) 1989.
CODEN: TECCDK. ISSN: 0392-3452. DOCUMENT TYPE: Journal;
General Review CA Section: 21 (General Organic Chemistry) Section
cross-reference(s): 67
A review with no refs. on the use of immobilized catalysts and reagents for cyanation, Wittig, alkylation, oxidn., and other reactions.

Keywords

review immobilization catalyst reagent

Index Entries

Polymer-supported reagents

in org. synthesis
Catalysts and Catalysis
polymer-supported, in org. synthesis

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111:3744

Reagent and apparatus for use in the measurement of hydrogen peroxide in a sample, method of preparation of same using catalase, and process for use thereof in the measurement of hydrogen peroxide.

Kusumi, Miyoko; Matsuyuki, Akira; Fujie, Shinichi (Meidensha K. K., Japan). Eur. Pat. Appl. EP 292727 A1 30 Nov 1988, 23 pp.

DESIGNATED STATES: R: CH, DE, FR, GB, IT, LI, NL, SE.

(European Patent Organization) CODEN: EPXXDW. CLASS: ICM:

C12Q001-30. ICS: C12N011-14; G01N021-76. ICA: C12Q001-28;

C12N011-10. APPLICATION: EP 88-106852 28 Apr 1988.

PRIORITY: JP 87-103209 28 Apr 1987; JP 87-103210 28 Apr 1987.

DOCUMENT TYPE: Patent CA Section: 9 (Biochemical Methods)

H₂O₂ in a sample is measured by mixing a reagent including H₂O₂ with (immobilized) catalase to decomp. the H₂O₂ of the reagent, adding an inhibitor to stop the reaction or having the catalase concn. at 10-200 Units/mL, adding the reagent to the sample, and measuring the content of H₂O₂ in the sample. The reagent comprises a luminescent reagent and catalase at 10-200 Units/mL or immobilized catalase. Methods for producing the reagents and an app. for detecting light produced by the reaction between a luminescent reagent and H₂O₂ in a sample in the presence of a catalyst are also disclosed. Luminol 2 × 10⁻⁷ M in carbonic acid 0.2 M was reacted with catalase 100 Units/mL at room temp. for 1 h before NaN₃ 0.01 M was added to stop the reaction. This soln. 0.5 mL and 0.5 mL microperoxidase (catalyst) 5 × 10⁻⁶ M were added to 0.1 mL solns. having various concns. (10⁻³-10⁻⁹ M) H₂O₂. The light produced was measured by a luminometer UPD-8000 as an integrated value for 15 s after mixing. When catalase was not used, background light greatly affected the measured value when the H₂O₂ concn. was <10⁻⁷ M. With the treatment, H₂O₂ could be measured to 10⁻⁸ M.

Keywords

hydrogen peroxide luminescence detn catalase

Index Entries

Glass, oxide

controlled-pore, aminopropylated, catalase reaction products, luminescent reagent treatment with, in hydrogen peroxide detn.

Immobilization, biochemical

of catalase, for luminescent reagent treatment for hydrogen peroxide detn.

Spectrometers

luminescence, for hydrogen peroxide detn., luminescent reagent treatment with catalase in relation to

9007-43-6, heme peptide

catalyst in hydrogen peroxide detn., luminescent reagent treatment with catalase in relation to

7722-84-1, analysis

detn. of, by luminescence anal., catalase treatment of luminescent reagent in

26628-22-8

in catalase treatment of luminescent reagent for hydrogen peroxide detn.

521-31-3

luminescent reagent for hydrogen peroxide detn. contg., catalase

treatment of
107-10-8, controlled pore glass derivs., catalase reaction products
9001-05-2
9001-05-2, immobilized
luminescent reagent treatment with, in hydrogen peroxide detn.

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110:113256

Method and apparatus for conducting catalytic reactions with simultaneous product separation and recovery.
Matson, Stephen L.; Quinn, John A. (University Patents, Inc., USA).
U.S. US 4786597 A 22 Nov 1988, 7 pp. Cont. of U.S. Ser. No. 254,350, abandoned. (United States of America) CODEN: USXXAM.
CLASS: ICM: C12P001-00. ICS: B01J019-24; C02F001-44; C12M001-40. NCL: 435041000. APPLICATION: US 83-479285 2 Jun 1983. PRIORITY: US 81-254350 15 Apr 1981. DOCUMENT TYPE: Patent CA Section: 16 (Fermentation and Bioindustrial Chemistry)

The method and app. for conducting catalytic chem. or biochem. reactions with simultaneous product sepn. and concn. comprises (1) providing a compartmentalized reactor comprising a feed stream flow path and a product stream flow sepd. by a multilayer composite membrane. The membrane consists of a feed stream-side permselective membrane which is permeable to reactants but not products, and a product stream side microporous membrane, contg., immobilized catalyst, which is permeable to products. (2) The feed mixt. is passed along the feed stream flow path, the reactant diffuses through the membrane to the catalytic layer, and a reactant is converted irreversibly to product. (3) An inert sweep fluid is passed along the product stream flow path at a flow rate lower than that of the feed mixt. to collect the product.

Keywords

reactor catalyst product sepn concn
membrane multilayer composite catalytic reactor

Index Entries

Reactors

for simultaneous product sepn. and recovery, multilayer composite membrane in

Cell

Enzymes

multilayer composite membrane-immobilized, catalytic reactor contg., simultaneous product sepn. and recovery with
Fermentation

simultaneous product sepn. and recovery in, multilayer composite membrane-contg. reactor for

Filtering materials

membranes, permselective, in catalytic reactor, multilayer composite membranes contg., simultaneous product sepn. and recovery in relation to

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110:76254

Polymeric Immobilized Metal-Complex Catalysts (Polimernye Immobilizovannye Metallokompleksnye Katalizatory).
Pomogailo, A. D. (USSR). (Nauka: Moscow, USSR), 302 pp. rub 4.20. (Russian) 1988. DOCUMENT TYPE: Book CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 38, 67

Abstract Unavailable

Keywords

book complex catalyst polymer supported

Index Entries

Polymer-supported reagents
metal complexes, catalysts
Catalysts and Catalysis
metal complexes, polymer-supported

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109:110173

Immobilized molybdenum catalysts for cyclohexene epoxidation.
Vasilev, K.; Stamenova, R.; Boeva, R.; Tsvetanov, C. (Cent. Lab.
Polym., Sofia 1040, Bulg.). Dokl. Bolg. Akad. Nauk, 40(11), 95-8
(English) 1987. CODEN: DBANAD. ISSN: 0366-8681. DOCUMENT
TYPE: Journal CA Section: 27 (Heterocyclic Compounds (One Hetero
Atom)) Section cross-reference(s): 24
Polymer-supported (NH₄)₆Mo₇O₂₄, MoO₂(acac)₂, and MoO₂Cl₂
catalyzed the epoxidn. of cyclohexene.

Keywords

epoxidn cyclohexene catalyst
cyclohexene epoxide

Index Entries

Epoxidation catalysts
polymer-supported molybdenum salts, for cyclohexene
110-83-8, reactions
epoxidn. of, catalysts for
12027-67-7
13637-68-8
17524-05-9
polymer-supported catalysts, for epoxidn. of cyclohexene
286-20-4
prepn. of

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108:227455

Immobilization of homogeneous catalysts on solid supports.
Kiiski, Ulla; Krause, Outi; Pakkanen, Tapani A. (Teknologiakeskus,
Neste Oy, Kulloo, Finland). Kem. - Kemi, 15(2), 133-6 (Finnish) 1988.
CODEN: KMKMAA. ISSN: 0355-1628. DOCUMENT TYPE: Journal;
General Review CA Section: 67 (Catalysis, Reaction Kinetics, and
Inorganic Reaction Mechanisms)
A review with 16 refs. on various methods of immobilization for cluster
compds. The advantages and disadvantages of homogeneous and
heterogeneous catalysts are discussed.

Keywords

review cluster compd immobilization support
catalyst cluster compd support prepn review

Index Entries

Cluster compounds, coordinative
catalysts from solid support and, prepn. methods for
Catalysts and Catalysis

cluster compds. immobilized on solid supports, prepn. method for

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108:206647

Oleic acid hydrogenation to stearic acid in preparation of
1,3-distearo-2-olein by transesterification.

Tadokoro, Yozo; Watanabe, Hisashi; Kitamura, Keizo (Nisshin Oil Mills,
Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62272982 A2 27 Nov 1987

Showa, 2 pp. (Japan) CODEN: JKXXAF. CLASS: ICM: C12P007-64.

ICS: C11C003-10. APPLICATION: JP 86-118339 21 May 1986.

DOCUMENT TYPE: Patent CA Section: 45 (Industrial Organic
Chemicals, Leather, Fats, and Waxes)

1,3-Distearo-2-olein is prepd. by transesterification of fats and oils
which contain oleic acid (I) with stearic acid (II) which was obtained by
hydrogenation of mixts. contg. I and II recovered from
transesterification. Thus, a mixt. of oleic sunflower oil and II was satd.
with water, passed through a column of immobilized lipase at 68°, and
the distd. to sep. fatty acids which were hydrogenated and recycled to
transesterification with good results.

Keywords

sunflower oil stearic acid transesterification
distearoolein
oleodistearin
triglyceride transesterification lipase catalyst
hydrogenation oleic acid

Index Entries

Transesterification catalysts

lipase, for oleic sunflower oil and stearic acid

Hydrogenation

of recovered oleic acid, for transesterification with oleic sunflower
oil

Sunflower oil

transesterification of, with hydrogenated recovered oleic acid and
stearic acid

112-80-1, reactions

hydrogenation of recovered, for manuf. of distearoolein by

transesterification of oleic sunflower oil

1333-74-0, unspecified

hydrogenation, of recovered oleic acid, for transesterification with
oleic sunflower oil

9001-62-1

immobilized, catalysts, for transesterification of oleic sunflower oil
with stearic acid

57-11-4, preparation

manuf. of, by hydrogenation of recovered oleic acid, for manuf. of
distearoolein by transesterification

2846-04-0

manuf. of, by transesterification of oleic sunflower oil with
hydrogenated recovered oleic acid and stearic acid

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108:91337

Enzyme-catalyzed steroid transformations in water-organic solvent
two-phase systems.

Carrea, Giacomo; Cremonesi, Piero (Ist. Chim. Ormoni, Milan 20131,
Italy). Methods Enzymol., 136(Immobilized Enzymes Cells, Pt. C),
150-7 (English) 1987. CODEN: MENZAU. ISSN: 0076-6879.

DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods)

Section cross-reference(s): 7, 32

Specific oxidn.-redn. of hydroxy-keto groups of steroids, catalyzed by NAD(P)+-dependent hydroxysteroid dehydrogenases is described. The reactions are carried out in 2-phase systems and are coupled to the enzymic regeneration of the coenzymes. The oxidn. of testosterone to androstenedione and oxidn. of Me cholate to Me 12-ketochenodeoxycholate are illustrated.

Keywords

enzyme catalyst steroid transformation
oxidn redn steroid enzyme

Index Entries

Immobilization, biochemical
of steroid dehydrogenases, in steroid transformations in water-org.
solvent two-phase systems
Enzymes
steroid transformations by, in water-org. solvent two-phase systems
Solvents
two-phase systems contg. water and, enzyme-catalyzed steroid
transformations in
Steroids, preparation
hydroxy, prepn. of, enzyme catalyzed, in water-org. solvent
two-phase systems
9028-42-6
9029-12-3
9031-72-5
61642-40-8
immobilized, steroid transformation catalyzed by, in water-org.
solvent two-phase systems
1448-36-8
oxidn. of, to Me ketochenodeoxycholate, catalyzed by
hydroxysteroid and glutamate dehydrogenases
58-22-0
oxidn. of, to androstenedione, hydroxysteroid and lactate
dehydrogenases in
10538-64-4
prepn. of, by oxidn. of methylcholate catalyzed by hydroxysteroid
and glutamate dehydrogenases
63-05-8
prepn. of, by oxidn. of testosterone catalyzed by hydroxysteroid and
lactate dehydrogenases

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108:76024

Study of complex formation between rhodium(I) carbonyl chloride and polymers containing olefin groups.
Mirzoeva, E. Sh.; Bronshtein, L. M.; Valetskii, P. M.; Vinogradova, S. V.; Yanovskaya, I. M.; Yadritseva, T. S.; Korshak, V. V. (Inst. Elementoorg. Soedin. im. Nesmeyanova, Moscow, USSR).
Vysokomol. Soedin., Ser. B, 29(12), 948-51 (Russian) 1987. CODEN: VYSBAI. ISSN: 0507-5483. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 38, 39, 67, 78
The complexation of $[RhCl(CO)_2]_2$ (I) with polybutadiene or block SBR gave a complex in which 2 of the CO ligands were replaced by p-bonded polymer ligands. The complexation occurred stepwise and was influenced by temp. and the molar fraction of I in the initial mixt. The complexes are of interest as immobilized catalysts.

Keywords

immobilization rhodium complex polybutadiene

SBR immobilization rhodium complex
chloro carbonyl rhodium complex
catalyst rhodium complex immobilized

Index Entries

Catalysts and Catalysis

rhodium chlorocarbonyl complexes, on polybutadiene or
butadiene-styrene block rubber, prepn. and structure of
Rubber, butadiene-styrene, reactions
block, immobilization on DST-30, of dichlorotetracarboxyldirrhodium
complex, structure in relation to
9003-17-2
immobilization of dichlorotetracarboxyldirrhodium complex on,
structure in relation to
14523-22-9
immobilization of, on polybutadiene or butadiene styrene block
rubber, structure in relation to
106107-54-4
rubber, block, immobilization on DST-30, of
dichlorotetracarboxyldirrhodium complex, structure in
relation to

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107:174445

Selective esterification in polyols.

Godtfredsen, Sven Erik; Bundgaard, Peter; Andresen, Otto (Novo
Industri A/S, Den.). PCT Int. Appl. WO 8605186 A1 12 Sep 1986, 24
pp. DESIGNATED STATES: W: AU, BB, BG, BR, DK, FI, HU, JP, KP,
KR, LK, MC, MG, MW, NO, RO, SD, SU, US; RW: AT, BE, CF, CG,
CH, CM, DE, FR, GA, GB, IT, LU, ML, MR, NL, SE, SN, TD, TG. (World
Intellectual Property Organization) CODEN: PIXXD2. CLASS: ICM:
C07H001-00. ICS: C07H013-02; C07H013-04; C07H009-04;
C07D317-24; C07D317-64; C12P007-62; C12P017-04;
C12P019-02. APPLICATION: WO 86-DK17 27 Feb 1986. PRIORITY:
DK 85-877 27 Feb 1985; DK 85-5147 7 Nov 1985. DOCUMENT
TYPE: Patent CA Section: 16 (Fermentation and Bioindustrial
Chemistry) Section cross-reference(s): 33
Selective esterification of only one of the hydroxy groups in polyols is
achieved by an enzyme catalyzed esterification of acetalized or
ketalized polyols, e.g. carbohydrates and glycerides, or by concomitant
acetalization or ketalization of the polyols and esterification of a ketal or
acetal in the presence of an enzyme. Thus, a mixt. of 3 equiv
Me(CH₂)₃CO₂Me and 100 mmol
1,2:5,6-di-O-isopropylidene-D-glucopyranose in 25 mL phosphate buffer
and 25 mL hexane contg. a freeze dried powder of Candida lipase was
stirred vigorously at 30° for 24 h to give 10%
4-O-butyryl-1,2:5,6-di-O-isopropylidene-D-glucose.

Keywords

polyol acetal ketal lipase monoesterification
catalyst transesterification lipase polyol acetal ketal
carbohydrate acetal ketal lipase esterification

Index Entries

Carbohydrates and Sugars, preparation

Glycols, reactions

acetals and ketals, transesterification of, with acid esters, by lipase
of microorganism and pancreas

Mucor miehei

lipase of immobilized, for transesterification of carbohydrate and
polyol acetals and ketals with acid esters

Candida
 Geotrichum
 Microorganism
 Nocardiosis
 Pseudomonas
 Serratia
 lipase of, for transesterification of carbohydrate and polyol acetals and ketals with acid esters
 Pancreas, composition
 lipase of, of swine, for transesterification of carbohydrate and polyol acetals and ketals with acid esters
 Transesterification
 of carbohydrate and polyol acetals and ketals with acid esters, by lipase of microorganism and pancreas
 96-22-0
 ketalization by, of glycerol
 9001-62-1
 of microorganisms and pancreas, for transesterification of polyol acetals and ketals
 109971-50-8
 prepn. of, by transesterification of diisopropylidene-fructopyranose with Me decanoate in presence of lipase
 3254-43-1
 24613-34-1
 109971-49-5
 109984-82-9
 prepn. of, by transesterification of diisopropylidene-glucofuranose with acid ester in presence of lipase
 109971-51-9
 prepn. of, by transesterification of diisopropylidene-sorbofuranose with Me butyrate in presence of lipase
 109971-48-4
 prepn. of, by transesterification of glycerol diethylketal with tributyrin in presence of lipase
 110-42-9
 transesterification by, of diisopropylidene-glucofuranose in presence of lipase
 60-01-5
 transesterification by, of glycerol diethylketal in presence of lipase
 112-39-0
 555-43-1
 transesterification by, of isopropylidene-glucofuranose in presence of lipase
 623-42-7
 transesterification by, of polyol acetals and ketals in presence of lipase
 74263-40-4
 transesterification of, by Me butyrate in presence of lipase
 15080-25-8
 transesterification of, by Me decanoate in presence of lipase
 582-52-5
 transesterification of, by acid esters in presence of lipase
 5694-80-4
 transesterification of, by glyceryl tributyrin in presence of lipase

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106:214676
 Structure and molecular mobility of polymer carriers and their metal complexes from NMR-relaxation data.
 Nazarova, I. I.; Pomogailo, A. D.; Nazarov, V. B.; Baturin, S. M. (Inst. Khim. Fiz., Chernogolovka, USSR). Vysokomol. Soedin., Ser. A, 29(4), 714-20 (Russian) 1987. CODEN: VYSAAF. ISSN: 0507-5475.
 DOCUMENT TYPE: Journal CA Section: 36 (Physical Properties of Synthetic High Polymers) Section cross-reference(s): 38

An NMR study revealed that high-d. polyethylene (I) [9002-88-4] consists of 3 phases: cryst., intermediate, and amorphous (surface). Grafting 7.2-11.0% polyacrylic acid and subsequent immobilization of 0.5-2% Cu(II), Ni(II), or V(IV) on grafted substrates via coordination to prep. a catalyst did not change the phase structure of I, while increasing the mol. mobility of I in the surface phase at 333 K. (This phenomenon was not obsd. at 363 K.). Both grafting and immobilization occurred in the surface phase of I.

Keywords

phase structure polyethylene grafting coordination
acrylic acid grafting polyethylene phase
copper coordination grafter polyethylene phase
nickel coordination grafted polyethylene phase
vanadium coordination grafted polyethylene phase
chain mobility polyethylene grafting coordination
catalyst grafted polyethylene immobilized metal

Index Entries

Polymer-supported reagents
catalysts, transition metal complexes with acrylic acid-grafted
polyethylene, mol. mobility and phase structure of polymer
in
Chains, chemical
mobility of, of polyethylene, effect of acrylic acid grafting and
transition metal coordination on
Polymer morphology
of polyethylene, effects of acrylic acid grafting and transition metal
coordination on
Coordination
of transition metals with acrylic acid-grafted polyethylene, mol.
mobility and phase structure of polymer in relation to
Catalysts and Catalysis
transition metal complexes with acrylic acid-grafted polyethylene,
mol. mobility and phase structure of polymer in
Polymerization
graft, of acrylic acid on polyethylene, mol. mobility and phase
structure in relation to
Magnetic relaxation
spin-lattice, of polyethylene, effect of acrylic acid grafting and
transition metal coordination on
Magnetic relaxation
spin-spin, of polyethylene, effect of acrylic acid grafting and
transition metal coordination on
14701-22-5, complexes with acrylic acid-grafted polyethylene
15158-11-9, complexes with acrylic acid-grafted polyethylene
22541-76-0, complexes with acrylic acid-grafted polyethylene
catalysts, mol. mobility and phase structure of polymer in
9002-88-4
98846-22-1, transition metal complexes
mol. mobility and phase structure of

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106:213271

Triphase catalysis. II. Asymmetric reduction of aromatic ketones with
immobilized chiral ammonium salts. Support effects.
Boyer, Bernard; Lamaty, Gerard; Roque, Jean Pierre; Solofo, Jonis
(Lab. Chim. Org. Phys., Univ. Sci. Tech. Languedoc, Montpellier
34060, Fr.). Nouv. J. Chim., 10(10), 559-62 (French) 1986. CODEN:
NJCHD4. ISSN: 0398-9836. DOCUMENT TYPE: Journal CA Section:
22 (Physical Organic Chemistry)
Chiral ammonium salts anchored on a polystyrene matrix catalyzed the

redn. of arom. compds., PhCOMe, pivalophenone (I), by NaBH₄ under triphase (liq./solid/solid) conditions. For sterically hindered ketones, e.g., I, asym. induction was obsd. in the redn. Also, asym. redn. was obsd. only for catalysts bearing a OH group b to the quaternary N atom. The asym. induction also depended upon the degree of crosslinking of the solid matrix.

Keywords

asym redn arom ketone
pivalophenone hydride redn stereochemistry
ammonium polystyrene redn catalyst

Index Entries

Ketones, reactions
asym. redn. of, catalysts for
Reduction catalysts
chiral ammonium salts bonded to polystyrene, for arom. ketones
Polymer-supported reagents
chiral ammonium salts on polystyrene matrix, catalysts, for asym.
redn. of arom. ketones
Asymmetric synthesis and induction
in redn. of arom. ketones, catalytic
Stereochemistry
of redn. of arom. ketones in presence of chiral ammonium salts
bonded to polystyrene matrix
Alcohols, preparation
prepn. of, by redn. of arom. ketones in presence of chiral
ammonium salts bonded to polystyrene matrix
Reduction
asym., of arom. ketones
611-70-1
938-16-9
asym. redn. of, polystyrene-supported quininium catalysts for
357-57-3, polystyrene-supported
attempted redn. of pivalophenone by sodium borohydride in
presence of
118-10-5, polystyrene-supported
130-95-0, polystyrene-supported
485-71-2, polystyrene-supported
552-79-4, polystyrene-supported
catalysts, for sodium borohydride redn. of arom. ketones,
stereochem. with
14898-86-3
prepn. of, by asym. redn. of isobutyrophenone
23439-91-0
24867-90-1
prepn. of, by asym. redn. of pivalophenone
613-86-5
13323-81-4
25675-29-0
43230-31-5
99531-06-3
prepn. of, by redn. of arom. ketone in presence of
polystyrene-supported quininium salt
93-55-0
98-86-2, reactions
99-90-1
100-06-1
100-19-6
redn. of, by polystyrene-supported quininium salt

106:52077

Metal ion catalysts immobilized in clay interlayers.

Takagi, Katsuhiko; Morikawa, Yutaka; Ikawa, Tsuneo (Res. Lab. Resour. Util., Tokyo Inst. Technol., Yokohama 227, Japan). Nendo Kagaku, 26(3), 170-9 (Japanese) 1986. CODEN: NEKAAJ. ISSN: 0470-6455. DOCUMENT TYPE: Journal CA Section: 45 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Cu(II) was intercalated into fluorotetrasilicic mica [Na(Mg_{2.5}Si₄O₁₀F₂)] by treating the latter with aq. soln. contg. Cu(II)-ammine complex cations, and the resulting mica-supported Cu(II) catalyst was studied on its catalytic activity to dehydrogenation of MeOH [67-56-1]. The catalyst showed good selectivity of catalytic dehydrogenation of MeOH into Me formate [107-31-3]; 38% of the MeOH was converted to Me formate with selectivity 100% at 220° and 52% was converted with selectivity 92% at 240°. The dehydrogenation proceeded through a preliminary dissociative adsorption of MeOH on Cu(II) ion, dehydrogenation of MeO on Cu(II) to form CH₂O as the rate-detg. step, and reaction of the CH₂O and MeO groups with further dehydrogenation on Cu(II) ion to form Me formate. The high selectivity was ascribed to homogeneous distribution and immobilization of Cu(II) ion having >3 vacant coordination sites in the interlayer of the catalytically inactive silicate layers of mica. No redn. of Cu(II) was noted during the dehydrogenation reaction of MeOH.

Keywords

catalyst dehydrogenation copper mica
methanol dehydrogenation methyl formate

Index Entries

Mica-group minerals, uses and miscellaneous
catalysts, contg. copper, for dehydrogenation of methanol to Me formate
Dehydrogenation catalysts
copper-mica, for methanol, in prodn. of Me formate
Dehydrogenation
of methanol to Me formate, mechanism of
67-56-1, reactions
dehydrogenation of, to Me formate, copper catalysts for
1333-74-0, unspecified
dehydrogenation, of methanol to Me formate, mechanism of
7440-50-8, uses and miscellaneous
intercalation compds. with mica, catalysts, for dehydrogenation of methanol to Me formate
107-31-3
prodn. of, by dehydrogenation of methanol, copper catalysts for

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124:81470

Texaphyrin immobilization on solid supports and medical devices.
Sessler, Jonathan L.; Iverson, Brent L.; Kral, Vladimir; Thomas, Richard E.; Smith, Daniel A.; Magda, Darren (Board of Reagents, the University of Texas System; Pharmacyclics, Inc., USA). PCT Int. Appl. WO 9529702 A1 9 Nov 1995, 128 pp. DESIGNATED STATES: W: JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (World Intellectual Property Organization). CODEN: PIXXD2. CLASS: ICM: A61K047-48. ICS: A61K031-395; A61L002-08; B01J031-22; C12Q001-68; A61K049-00; B01D015-08. APPLICATION: WO 95-US5421 28 Apr 1995. PRIORITY: US 94-236218 28 Apr 1994. DOCUMENT TYPE: Patent CA Section: 9 (Biochemical Methods) Section cross-reference(s): 63, 78

Novel matrix-supported texaphyrins are provided in which a polymeric

or solid matrix is covalently modified by the addn. of ^3H texaphyrin or texaphyrin deriv. Polymer-supported texaphyrins may be used as chromatog. supports, e.g., in the sepn. of neutral and anionic species, and in applications involving phosphate ester hydrolysis, other catalytic schemes, MRI, and photodynamic therapy. Thus, Eu-texaphyrincarboxylic acid I was treated with carbodiimide and 1-hydroxybenzotriazole and then coupled to 3-aminopropyl silica gel. A silica bead-supported lanthanide-texaphyrin complex was used to remove RNA contaminants from plasmid DNA by utilizing the susceptibility of RNA to hydrolysis by the lanthanide complex catalyst.

Keywords

texaphyrin immobilization catalyst chromatog

Index Entries

Nucleic acid bases

conjugates with texaphyrins; texaphyrin immobilization on solid supports and medical devices

Plasmid and Episome

Amides, reactions

Esters, reactions

hydrolysis of; texaphyrin immobilization on solid supports and medical devices

Rare earth metals, analysis

texaphyrin complexes; texaphyrin immobilization on solid supports and medical devices

Chemical warfare agents

Fungicides and Fungistats

Herbicides

Hydrogenation catalysts

Hydrolysis catalysts

Medical goods

Pesticides

Photolysis catalysts

Polymerization catalysts

Polymer-supported reagents

Virucides and Virustats

Polymers, analysis

Arsenates

Pseudohalides

Sulfonates

Bromides, analysis

Carbohydrates and Sugars, analysis

Chlorides, analysis

Fluorides, analysis

Nitrates, analysis

Nucleotides, analysis

Phosphates, analysis

Sulfates, analysis

Deoxyribonucleic acids

Ribonucleic acids

Ceramic materials and wares

Glass, oxide

Latex

Clays, uses

Polyamides, uses

Rubber, silicone, uses

Silica gel, uses

Siloxanes and Silicones, uses

Urethane polymers, uses

Zeolites, uses

Coenzymes

Phospholipids, reactions

texaphyrin immobilization on solid supports and medical devices
Imaging

NMR, contrast agents, texaphyrin immobilization on solid
supports and medical devices

Joint, anatomical

artificial, texaphyrin immobilization on solid supports and medical
devices

Electrophoresis and Ionophoresis

capillary, texaphyrin immobilization on solid supports and medical
devices

Medical goods

catheters, texaphyrin immobilization on solid supports and
medical devices

Phototherapy

chemo-, texaphyrin immobilization on solid supports and medical
devices

Carbohydrates and Sugars, analysis

Oligosaccharides

Amino acids, biological studies

conjugates, with texaphyrin; texaphyrin immobilization on solid
supports and medical devices

Peptides, biological studies

conjugates, with texaphyrins; texaphyrin immobilization on solid
supports and medical devices

Magnetic substances

dia-, texaphyrin complexes; texaphyrin immobilization on solid
supports and medical devices

Virus, animal

enveloped, texaphyrin immobilization on solid supports and
medical devices

Carboxylic acids, analysis

Sulfonic acids, analysis

esters, texaphyrin immobilization on solid supports and medical
devices

Virus, animal

feline immunodeficiency, texaphyrin immobilization on solid
supports and medical devices

Virus, animal

herpes simplex, texaphyrin immobilization on solid supports and
medical devices

Chromatography, column and liquid

high-performance, stationary phases, texaphyrin immobilization
on solid supports and medical devices

Virus, animal

human immunodeficiency, texaphyrin immobilization on solid
supports and medical devices

Prosthetic materials and Prosthetics

implants, texaphyrin immobilization on solid supports and medical
devices

Nucleotides, uses

oligo-, deoxyribo-, aminoalkyl, conjugates with texaphyrin europium
complexes, RNA site-specific hydrolysis by; texaphyrin
immobilization on solid supports and medical devices

Magnetic substances

para-, texaphyrin complexes; texaphyrin immobilization on solid
supports and medical devices

Virus, animal

retro-, texaphyrin immobilization on solid supports and medical
devices

Carboxylic acids, analysis

salts, texaphyrin immobilization on solid supports and medical
devices

Virus, animal

simian immunodeficiency, texaphyrin immobilization on solid
supports and medical devices

Chromatography

stationary phases, texaphyrin immobilization on solid supports and medical devices

Transition metal compounds

texaphyrin complexes, texaphyrin immobilization on solid supports and medical devices

Photodynamic action

therapeutic, texaphyrin immobilization on solid supports and medical devices

Acylation catalysts

trans-, texaphyrin immobilization on solid supports and medical devices

Amino acids, biological studies

D-, conjugates with texaphyrin; texaphyrin immobilization on solid supports and medical devices

2415-43-2

hydrolysis of; texaphyrin immobilization on solid supports and medical devices

7782-44-7, preparation

singlet; texaphyrin immobilization on solid supports and medical devices

1306-06-5

sintered; texaphyrin immobilization on solid supports and medical devices

7664-93-9, esters

7697-37-2, esters

7723-14-0, org. compds.

7778-39-4, esters

13598-36-2, esters

7664-38-2, esters

7439-89-6, texaphyrin complexes

7440-02-0, texaphyrin complexes

7440-48-4, texaphyrin complexes

7440-50-8, texaphyrin complexes

7440-54-2, texaphyrin complexes

115652-49-8, derivs.

7429-91-6, texaphyrin complexes

7439-91-0, texaphyrin complexes

7439-94-3, texaphyrin complexes

7439-96-5, texaphyrin complexes

7439-97-6, texaphyrin complexes

7440-00-8, texaphyrin complexes

7440-10-0, texaphyrin complexes

7440-19-9, texaphyrin complexes

7440-20-2, texaphyrin complexes

7440-27-9, texaphyrin complexes

7440-30-4, texaphyrin complexes

7440-43-9, texaphyrin complexes

7440-45-1, texaphyrin complexes

7440-52-0, texaphyrin complexes

7440-53-1, texaphyrin complexes

7440-60-0, texaphyrin complexes

7440-64-4, texaphyrin complexes

7440-65-5, texaphyrin complexes

7440-66-6, texaphyrin complexes

7440-70-2, texaphyrin complexes

7440-74-6, texaphyrin complexes

115652-49-8, multimers

134020-79-4, multimers

158272-82-3

74-85-1, halo, polymers

79-10-7, esters, polymers

1344-28-1, uses

1398-61-4

7631-86-9, uses

9002-86-2
 9002-88-4
 9003-05-8
 9003-07-0
 9003-53-6
 9003-69-4
 9004-34-6, uses
 9005-32-7
 9012-36-6
 9012-76-4
 26023-30-3
 26100-51-6
 61029-13-8
 172757-84-5
 56-65-5, preparation
 58-61-7, preparation
 58-64-0, preparation
 60-92-4
 61-19-8, preparation
 65-85-0, preparation
 98-11-3, preparation
 701-64-4
 838-85-7
 172757-81-2
 164388-50-5
 172757-80-1
 texaphyrin immobilization on solid supports and medical devices

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125:328130

Immobilization of polymer-protected metal colloid catalysts by the formation of polymer hydrogen bond complexes.
 Wang, Yuan; Liu, Hanfan; Huang, Yanxia (Institute of Chemistry, Chinese Academy of Sciences, Beijing 100080, Peop. Rep. China). Polym. Adv. Technol., 7(8), 634-638 (English) 1996. CODEN: PADTE5. ISSN: 1042-7147. DOCUMENT TYPE: Journal CA Section: 24 (Alicyclic Compounds) Section cross-reference(s): 35, 37, 67
 Nanoscopic noble metal (Pt, Pd, Rh) colloidal catalysts, protected by poly(N-vinyl-2-pyrrolidone) (PVP) or polyvinyl alc. (PVA), were immobilized to give heterogeneous catalysts by forming polymer hydrogen bond complexes with polyacrylic acid (PAA). A PVP-PAA-Pd catalyst was found to be very active and selective for the partial hydrogenation of cyclopentadiene to cyclopentene.

Keywords

polymer complex metal colloid hydrogenation catalyst
 PVA colloidal palladium platinum rhodium catalyst
 cyclopentadiene hydrogenation palladium PVP colloid catalyst
 cyclopentene prepn palladium PVP colloid catalyst

Index Entries

Platinum-group metals
 catalyst; immobilization of polymer-protected metal colloid
 hydrogenation catalysts by hydrogen bonding to polymers
 Colloids
 Hydrogen bond
 Hydrogenation catalysts
 Hydrogenation
 immobilization of polymer-protected metal colloid hydrogenation
 catalysts by hydrogen bonding to polymers
 Acrylic polymers, uses
 support polymer; immobilization of polymer-protected metal

colloid hydrogenation catalysts by hydrogen bonding to
 polymers
 Alkenes, uses
 polymers, colloid component; immobilization of polymer-protected
 metal colloid hydrogenation catalysts by hydrogen bonding
 to polymers
 7647-10-1
 10049-07-7
 16941-12-1
 catalyst precursor; immobilization of polymer-protected metal
 colloid hydrogenation catalysts by hydrogen bonding to
 polymers
 7440-05-3, preparation
 7440-06-4, preparation
 7440-16-6, preparation
 catalyst; immobilization of polymer-protected metal colloid
 hydrogenation catalysts by hydrogen bonding to polymers
 9002-89-5
 9003-39-8
 colloid component; immobilization of polymer-protected metal
 colloid hydrogenation catalysts by hydrogen bonding to
 polymers
 142-29-0
 hydrogenation product; immobilization of polymer-protected metal
 colloid hydrogenation catalysts by hydrogen bonding to
 polymers
 542-92-7, reactions
 hydrogenation substrate; immobilization of polymer-protected
 metal colloid hydrogenation catalysts by hydrogen bonding
 to polymers
 9003-01-4
 support polymer; immobilization of polymer-protected metal
 colloid hydrogenation catalysts by hydrogen bonding to
 polymers

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122:137579

Two-stage process for the manufacture of hydrogen peroxide.
 Guillet, James E.; Friedman, Gad (Can.). U.S. US 5374339 A 20 Dec
 1994, 6 pp. (United States of America). CODEN: USXXAM. CLASS:
 ICM: C01B015-024. ICS: C01B015-026. NCL: 204157500.
 APPLICATION: US 93-136020 14 Oct 1993. DOCUMENT TYPE:
 Patent CA Section: 49 (Industrial Inorganic Chemicals)
 The process comprises prepg. supported anthrahydroquinone (I)
 moieties bonded to a insol. inert support by photochem. reaction of
 similarly supported anthraquinone (II) moieties with a H-donating org.
 substrate, reacting O with the supported I moieties to form the
 supported II moieties, and recovering the resulting H2O2 as a soln. The
 immobilization prevents loss of the I during the process. The
 H-donating org. substrate is an alc., esp. Me2CHOH, and the solid
 support is SiO2, glass, polyethylene, or cellulose.

Keywords

anthraquinone immobilization anthrahydroquinone hydrogen peroxide
 support anthraquinone immobilization
 glass fiber support anthraquinone immobilization
 silica gel support anthraquinone immobilization
 polyethylene support anthraquinone immobilization
 cellulose support anthraquinone immobilization
 isopropanol anthrahydroquinone hydrogen peroxide

Index Entries

Alcohols, reactions
hydrogen donors; immobilized anthraquinone catalyst for the
manuf. hydrogen peroxide
Glass fibers, uses
substrates; immobilized anthraquinone catalyst for the manuf.
hydrogen peroxide
Glass, oxide
beads, substrates; immobilized anthraquinone catalyst for the
manuf. hydrogen peroxide
Alcohols, reactions
polyhydric, hydrogen donors; immobilized anthraquinone catalyst
for the manuf. hydrogen peroxide
Alcohols, reactions
secondary, hydrogen donors; immobilized anthraquinone catalyst
for the manuf. hydrogen peroxide
56-81-5, reactions
67-63-0, reactions
hydrogen donor; immobilized anthraquinone catalyst for the manuf.
hydrogen peroxide
84-48-0
84-50-4
117-78-2
6470-87-7
161121-80-8
161121-81-9
7722-84-1, preparation
7782-44-7, reactions
immobilized anthraquinone catalyst for the manuf. hydrogen
peroxide
7631-86-9, uses
9002-88-4
9004-34-6, uses
substrate; immobilized anthraquinone catalyst for the manuf.
hydrogen peroxide
84-65-1
4981-66-2
supported; immobilized anthraquinone catalyst for the manuf.
hydrogen peroxide

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125:36320

New insoluble surfactants systems as aids in catalysis. A convenient
method for nonbonded immobilization of catalytically active
transition metal complexes.

Flach, H. N.; Grassert, I.; Oehme, G.; Capka, M. (Inst. Organische
Katalyseforschung, Univ. Rostock e.V., Rostock 18055, Germany).

Colloid Polym. Sci., 274(3), 261-8 (English) 1996. CODEN: CPMSB6.

ISSN: 0303-402X. DOCUMENT TYPE: Journal CA Section: 46

(Surface Active Agents and Detergents) Section cross-reference(s):
34, 67

New insol. surface-active substances were synthesized by
esterification of the surfactants Na 11-hydroxy-undecane-1-sulfonate or
dodecaethylene glycol monododecyl ether with an aliph. amino
group-contg. ester with the bifunctional reagent 3-(triethoxysilyl)propyl
isocyanate, and anchoring the products obtained on silica 100 under
mild conditions. The immobilized surfactants showed a micellar effect,
as proved by their influence on reaction rate and selectivity in the
enantioselective hydrogenation of Me (Z)- α -acetamido-cinnamate to
Me (R)-N-acetyl-phenylalaninate by means of an optically active Rh
complex in water. The systems were compared with an inorg. ion
exchanger with dodecyl sulfate counterions and with Na dodecyl sulfate
adsorbed to Al₂O₃. The influence of the immobilized surfactants on
reaction rate and selectivity appeared to be dependent on the mobility
of the hydrophobic chains.

Keywords

surfactant modification immobilization transition metal catalysis
catalyst aid surfactant immobilization metal complex
enantioselective hydrogenation acetamidocinnamate phenylalaninate
surfactant

Index Entries

Surfactants

prepn. of modified surfactants immobilized on silica and their use
as catalyst supports for enantioselective hydrogenation

Hydrogenation catalysts

stereoselective, prepn. of modified surfactants immobilized on
silica and their use as catalyst supports for
enantioselective hydrogenation

35138-22-8

catalyst, immobilized in surfactant on silica; prepn. of modified
surfactants immobilized on silica and their use as catalyst
support in enantioselective hydrogenation

2184-96-5

177857-71-5

65247-00-9

137048-10-3

177857-72-6

intermediate; prepn. of modified surfactants immobilized on silica
and their use as catalyst supports for enantioselective
hydrogenation

60676-51-9

prepn. of modified surfactants immobilized on silica and their use
as catalyst support in enantioselective hydrogenation of

21156-62-7

prepn. of modified surfactants immobilized on silica and their use
as catalyst supports for enantioselective hydrogenation

177857-73-7

silica-bound, catalyst support; prepn. of modified surfactants
immobilized on silica and their use as catalyst supports for
enantioselective hydrogenation

9002-92-0

24801-88-5

147708-37-0

starting material; prepn. of modified surfactants immobilized on
silica and their use as catalyst supports for
enantioselective hydrogenation

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124:98893

[2-(3-Trimethoxysilylthio)ethyl]diphenylphosphine- a new agent for
transition metal immobilization.

Capka, M.; Czakoova, M.; Hillerova, E.; Paetzold, E.; Oehme, G.

(Institute of Chemical Process Fundamentals, Academy of Science of
the Czech Republic, Rozvojova 135, CS 165 02 Prague 6, Czech.). J.

Mol. Catal. A: Chem., 104(2), 123-5 (English) 1995. CODEN:

JMCCF2. ISSN: 1381-1169. DOCUMENT TYPE: Journal CA Section:

67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 78

Reaction of vinylidiphenylphosphine with

(3-mercaptopropyl)trimethoxysilane was used to prep.

[2-(3-trimethoxysilylpropylthio)ethyl]diphenylphosphine as a convenient
functionalizing agent for inorg. supports. Rhodium complexes

immobilized on silica modified with this agent are efficient catalysts for
hydrosilylation of unsatd. compds. and thiophene by
hydrodesulfurization.

Keywords

trimethoxysilylpropylthio ethyl diphenylphosphine transition metal
immobilization
hydrosilylation catalyst immobilization trimethoxysilylpropylthio ethyl
diphenylphosphine
hydrodesulfurization catalyst immobilization trimethoxysilylpropylthio
ethyl diphenylphosphine
rhodium catalyst immobilization trimethoxysilylpropylthio ethyl
diphenylphosphine

Index Entries

Hydrosilylation catalysts
[2-(3-Irimethoxysilylpropylthio)ethyl]diphenylphosphine as agent for
transition metal immobilization
Desulfurization catalysts
reductive, for thiophene;
[2-(3-Irimethoxysilylpropylthio)ethyl]diphenylphosphine as
agent for transition metal immobilization
7631-86-9, uses
12122-73-5
2155-96-6
4420-74-0
[2-(3-Irimethoxysilylpropylthio)ethyl]diphenylphosphine as agent for
transition metal immobilization
151340-74-8
[2-(3-Trimethoxysilylpropylthio)ethyl]diphenylphosphine as agent for
transition metal immobilization
110-02-1
hydrodesulfurization of;
[2-(3-Irimethoxysilylpropylthio)ethyl]diphenylphosphine as
agent for transition metal immobilization
592-76-7
hydrosilylation of;
[2-(3-Irimethoxysilylpropylthio)ethyl]diphenylphosphine as
agent for transition metal immobilization

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123:231654

Immobilization of polymers on cellulose acetate membranes.
Knyaz'kova, T. V. (Department of Water Treatment Processes and
Apparatus, Institute of Colloid and Water Chemistry, Ukrainian
Academy of Sciences, 42 Vernadskii pr., Kiev 142 252680, Ukraine).
Catal. Today, 25(3-4), 255-62 (English) 1995. CODEN: CATTEA.
ISSN: 0920-5861. DOCUMENT TYPE: Journal CA Section: 43
(Cellulose, Lignin, Paper, and Other Wood Products) Section
cross-reference(s): 66, 67
Using models of dead-end filtration theory, the kinetics of forming
dynamic layers of sulfate lignin (SL) and sodium CM-cellulose
(Na-CMC) onto cellulose acetate (CA) membranes during cross-flow
filtration of dil. solns. of polymers was studied. It was found for both
polymers (compact SL and linear Na-CMC), that the polymer layer with
the least hydraulic resistance, which yields a small redn. in membrane
water permeability (10-20%), but a significant increase in salt rejection,
is formed, if the process kinetics corresponds to the J-V linear
dependence predicted by the model of 'blocking a pore by a single
particle'. The results obtained may be used to define the optimum
conditions for immobilizing the available catalytic active polymers on
regular semipermeable membranes during the membrane filtration
process.

Keywords

model immobilization polymer catalyst acetylcellulose membrane
sulfate lignin immobilization cellulose acetate membrane
CMC immobilization cellulose acetate membrane
cellulose acetate membrane polymer immobilization model

Index Entries

Filtration

immobilization during filtration of sulfate lignin and CMC on
cellulose acetate membranes as model for immobilization
of polymeric catalysts on membranes

Catalysts and Catalysis

immobilization of sulfate lignin and CMC on cellulose acetate
membranes as model for immobilization of polymeric
catalysts on membranes

Membranes

semipermeable, immobilization of sulfate lignin and CMC on
cellulose acetate membranes as model for immobilization
of polymeric catalysts on membranes

9004-35-7

8068-05-1

9004-32-4

immobilization of sulfate lignin and CMC on cellulose acetate
membranes as model for immobilization of polymeric
catalysts on membranes

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122:57242

Immobilization of porcine pancreas lipase and its catalyzed
transesterification reaction of methyl butyrate and 1-butanol in
organic systems.

Xie, Zhi-Dong; He, Bing-Lin; Lu, Xian-Yu (Institute of Polymer
Chemistry, Nankai Univ., Tianjin 300071, Peop. Rep. China). Gaodeng
Xue Xiao Huaxue Xue Bao, 15(9), 1335-9 (Chinese) 1994. CODEN:
KTHPDM. ISSN: 0251-0790. DOCUMENT TYPE: Journal CA

Section: 37 (Plastics Manufacture and Processing) Section

cross-reference(s): 7, 23

Series of macroporous cross-linked polymers of styrene with
divinylbenzene and their functionalization products were synthesized.
Effects of degree of crosslinking, amt. of pore-generating agent and
different aminating agents on immobilization of porcine pancreas
lipase (PPL) were studied. The best carrier was selected.

Transesterification of Me butyrate with 1-butanol was catalyzed by the
free and immobilized PPL, it was found that the catalytic activity of
immobilized PPL in org. systems was two times as high as that of the
free PPL.

Keywords

styrene divinylbenzene copolymer enzyme immobilization
methyl butyrate butanol transesterification catalyst
porcine pancreas lipase immobilization transesterification

Index Entries

Adsorption

adsorption of porcine pancreas lipase by divinylbenzene-styrene
copolymer

Immobilization, biochemical

Transesterification catalysts

Transesterification

immobilization of porcine pancreas lipase on
divinylbenzene-styrene copolymer for transesterification of

Me butyrate with butanol
 Polymer morphology
 structure effect on immobilization of porcine pancreas lipase on
 divinylbenzene-styrene copolymer
 107-15-3, reaction products with chloromethylated
 divinylbenzene-styrene copolymer
 109-76-2, reaction products with chloromethylated
 divinylbenzene-styrene copolymer
 110-60-1, reaction products with chloromethylated
 divinylbenzene-styrene copolymer
 112-24-3, reaction products with chloromethylated
 divinylbenzene-styrene copolymer
 124-09-4, reaction products with chloromethylated
 divinylbenzene-styrene copolymer.
 catalyst support; immobilization of porcine pancreas lipase on
 aminated divinylbenzene-styrene copolymer for
 transesterification of Me butyrate with butanol
 9003-70-7
 catalyst support; immobilization of porcine pancreas lipase on
 divinylbenzene-styrene copolymer for transesterification of
 Me butyrate with butanol
 9003-70-7, chloromethylated, aminated
 immobilization of porcine pancreas lipase on aminated
 divinylbenzene-styrene copolymer for transesterification of
 Me butyrate with butanol
 71-36-3, reactions
 623-42-7
 109-21-7
 immobilization of porcine pancreas lipase on
 divinylbenzene-styrene copolymer for transesterification of
 Me butyrate with butanol
 9001-62-1
 porcine pancreas; immobilization of porcine pancreas lipase on
 divinylbenzene-styrene copolymer for transesterification of
 Me butyrate with butanol

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118:156499
 Incorporation of spent ion-exchange resins in thermosetting resins.
 Rao, S. V. S.; Lal, K. B.; Amalraj, R. V. (Fuel Reprocess. Nucl. Waste
 Manage. Group, BARC, Kalpakkam 603 102, India). Waste Manage.
 (N. Y.), 12(4), 337-43 (English) 1992. CODEN: WAMAE2. ISSN:
 0956-053X. DOCUMENT TYPE: Journal CA Section: 71 (Nuclear
 Technology)
 Urea formaldehyde and phenol formaldehyde polymers have been
 examd. as possible candidate materials for immobilization of spent
 ion-exchange resin. Polymer blocks of 45 mm diam. and 44 mm height
 contg. 30 g of resin, employing alk. catalysts at a temp. range of
 50-100°, were prepd. in the lab. The blocks were characterized for
 phys. and mech. properties and also for leach resistance. These
 values were compared with those of cement matrixes. The
 compressive strengths of polymer blocks were 6-9 times higher and the
 diffusion co-efficients lower by four orders of magnitude. The
 thermogravimetric anal. of the blocks showed that the polymer matrixes
 were stable up to 250°. In order to predict the peak center temp. in a
 200 L drum operation, polymer blocks of 10 times larger vol. were
 prepd. and temps. were measured during solidification. The theor.
 peak center temp. was predicted to be less than the decompn. temps.
 of the polymers.

Keywords

spent ion exchanger waste immobilization
 radioactive waste ion exchanger polymer immobilization

urea formaldehyde polymer immobilization radioactive waste
phenol formaldehyde polymer immobilization radioactive waste
thermosetting resin immobilization waste

Index Entries

Leaching

of cesium, from spent ion exchanger waste immobilized in
thermosetting resins

Compression and Compressibility

of spent ion exchanger waste immobilized in thermosetting resins

Immobilization

of spent ion exchanger waste, in thermosetting resins

Radioactive wastes

ion exchangers, immobilization of, in thermosetting resins

127-09-3

catalyst of ammonia and, for polymn. of urea and formaldehyde in
immobilization of spent ion exchanger waste

7664-41-7, uses

catalyst of sodium acetate and, in polymn of urea and
formaldehyde for immobilization of spent ion exchanger
waste

17194-00-2

catalyst, for polymn. of phenol and formaldehyde for
immobilization of spent ion exchanger waste

9003-35-4

9011-05-6

immobilization in, of spent ion exchanger waste

7440-46-2, uses

leaching of, from polymer immobilized spent ion exchanger waste

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117:117037

Manufacture of porous silica gel and porous vitreous silica.

Takei, Koichi; Hayashi, Fusaji; Machii, Yoichi; Shimazaki, Toshikatsu

(Hitachi Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP

04132609 A2 6 May 1992 Heisei, 3 pp. (Japan). CODEN: JKXXAF.

CLASS: ICM: C01B033-152. ICS: C03B008-02. APPLICATION: JP

90-254586 25 Sep 1990. DOCUMENT TYPE: Patent CA Section: 57

(Ceramics) Section cross-reference(s): 9, 13, 19, 49

The porous SiO₂ gel is manufd. by hydrolysis of a Si alkoxide in a basic
catalyst-contg. solvent in the presence of hydroxyalkyl cellulose to form

a SiO₂ sol, and heating and drying the sol. The porous vitreous SiO₂ is

manufd. by firing the porous SiO₂ gel. The porous silica gel and glass

are used as catalysts, and as supports for cells of animals and plants.

To a mixt. of MeOH 85 and aq. choline soln. (concn. 0.02 mol/L) 40

were added hydroxypropyl cellulose (2 wt.% aq. soln.) 2 wt. parts, the

resulting soln. was added to polymethoxysilane (partial condensation

product of Si(OME)₄), to form a sol, which was gelled and dried to

obtain porous SiO₂ gel having pore size 3 mm. The gel was fired at

1000° in air to obtain porous vitreous SiO₂ having pore size 2.5 mm.

Keywords

porous silica gel catalyst cell support

glass porous silica catalyst cell support

Index Entries

Silica gel, preparation

manuf. of porous, from silicon alkoxides, by sol-gel process, for

biochem. immobilization and catalyst supports

Immobilization, biochemical

supports for, porous vitreous silica manuf. for, by sol-gel process

Catalysts and Catalysis

supports, silica, vitreous, manuf. of porous, by sol-gel process
62-49-7

catalyst, in porous vitreous silica manuf. by sol-gel process, for
biochem. immobilization and catalyst supports
9004-34-6, hydroxyalkyl derivs.

9004-64-2

hydrolysis in presence of, in porous vitreous silica manuf. by sol-gel
process, for biochem. immobilization and catalyst
supports

60676-86-0

manuf. of porous, from silicon alkoxides, by sol-gel process, for
biochem. immobilization and catalyst supports

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123:170551

Porous polymer substrates for immobilization of Lewis acid catalysts
for olefin polymerization.

Chen, Frank Joung-Yei; Chung, Tze-Chiang; Stanat, Jon Edmond; Lee,
Soon Hung (Exxon Chemical Patents, Inc., USA). PCT Int. Appl. WO
9428037 A1 8 Dec 1994, 56 pp. DESIGNATED STATES: W: KR;

RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT,
SE. (World Intellectual Property Organization). CODEN: PIXXD2.

CLASS: ICM: C08F010-00. ICS: C08F008-42; C08F004-14;

C08F004-64. APPLICATION: WO 94-US5615 19 May 1994.

PRIORITY: US 93-65325 20 May 1993. DOCUMENT TYPE: Patent

CA Section: 35 (Chemistry of Synthetic High Polymers)

Immobilized Lewis Acid catalysts are prepd. and used for the
carbocationic polymn. of olefins. A copolymer of propene and
9-(5-hexen-1-yl)-9-borabicyclo[3.3.1]nonane was prepd. and treated
with NaOH and H₂O₂ to give a hydroxylated polymer which was used to
prep. a porous film. The film was treated with EtAlCl₂ to give a film
contg. OAlCl₂ groups. Isobutylene was polymd. by contact with the film,
giving viscous polyisobutylene.

Keywords

Lewis acid catalyst immobilization polymn olefin
ethylaluminum dichloride catalyst immobilization polymn olefin
support polymer Lewis acid catalyst polymn
polyisobutylene prepn Lewis acid catalyst immobilization
film support Lewis acid catalyst polymn
propene copolymer support Lewis acid catalyst
borabicyclononane copolymer support Lewis acid catalyst

Index Entries

Polymerization catalysts

Lewis acids

supports for Lewis acid catalysts for polymn. of olefins

563-43-9, reaction products with hydroxylated

hexenylborabicyclononane-olefin copolymers

catalysts, films; for polymn. of olefins

131131-03-8, hydroxy derivs.

147738-21-4, hydroxy derivs.

films; supports for Lewis acid catalysts for polymn. of olefins

9003-27-4

supported Lewis acid catalysts for prepn. of

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123:164292

A simple method for catalyst immobilization on electrode surfaces.

De Smet, Steven; Cassidy, John; McCormac, Tim; Maes, Noel A.

(Chem. Dep., Dublin Inst. Technol., Dublin, Ire.). Electroanalysis, 7(8), 782-4 (English) 1995. CODEN: ELANEU. ISSN: 1040-0397.

DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods)

Catalytic layers of a cobalt tetraphenylporphyrin/polystyrene composite coated on a glassy carbon electrode are shown to allow the redn. of oxygen at less neg. potentials than at the bare electrode. When this layer was overcoated with a glucose oxidase (GOD) layer, the glucose could be detd. under aerobic conditions. A similar ferrocene/polystyrene composite overcoated with a glucose oxidase layer allowed the detn. of glucose under anaerobic conditions.

Keywords

catalyst immobilization electrode surfaces

Index Entries

Immobilization, biochemical

a simple method for catalyst immobilization on electrode surfaces

Electrodes

bio-, enzyme, glucose-selective, a simple method for catalyst immobilization on electrode surfaces

50-99-7, analysis

9001-37-0

102-54-5

9003-53-6

14172-90-8

a simple method for catalyst immobilization on electrode surfaces

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122:164801

Manufacture of amphipathic substance-contg. silica supports with good dispersibility for catalyst supports and immobilization of coloring materials and enzymes.

Sakata, Kanji; Kunitake, Toyoki (Shingijutsu Kaihatsu Jigyodan; Tokuyama Soda Kk, Japan). Jpn. Kokai Tokkyo Koho JP 06298518

A2 25 Oct 1994 Heisei, 8 pp. (Japan). CODEN: JKXXAF. CLASS:

ICM: C01B033-12. ICS: A61K047-04; B01J037-02. APPLICATION:

JP 93-88499 15 Apr 1993. DOCUMENT TYPE: Patent CA Section:

49 (Industrial Inorganic Chemicals) Section cross-reference(s): 63, 67

The process comprises prepg. a SiO₂ composite by evapn. for removal of the solvent from a mixed liq. dispersion contg. an amphipathic substance having polar- and hydrophobic group added on both terminals and a SiO₂ formable substance, contacting the SiO₂ composite with an ionic substance (or its precursor) to be supported for supporting the latter thereon, and then optionally chem.- or heat treating in the presence of a amphipathic substance.

Keywords

silica support amphipathic substance manuf

catalyst support silica amphipathic manuf

coloring agent silica support manuf

enzyme immobilization silica support manuf

Index Entries

Coloring materials

Surfactants

Enzymes

manuf. of amphipathic substance-contg. silica supports with good dispersibility for catalyst supports and immobilization of

coloring materials and enzymes

Catalysts and Catalysis

supports, manuf. of amphipathic substance-contg. silica supports

with good dispersibility for catalyst supports

57-09-0

3539-43-3

87896-09-1

137045-17-1

152306-27-9

amphipathic substance; manuf. of amphipathic substance-contg.

silica supports with good dispersibility for catalyst

supports and immobilization of coloring materials and

enzymes

7631-86-9, preparation

supports; manuf. of amphipathic substance-contg. silica supports

with good dispersibility for catalyst supports and

immobilization of coloring materials and enzymes

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119:187519

Oxidation and removal of chlorinated hydrocarbons.

Berty, J. M.; Stenger, H. G., Jr.; Buzan, G. E.; Hu, K. (Berty React. Eng.,

Ltd., Fogelsville, PA 18051-9712, USA). Stud. Surf. Sci. Catal.,

75(New Frontiers in Catalysis, Pt. B), 1571-4 (English) 1993. CODEN:

SSCTDM. ISSN: 0167-2991. DOCUMENT TYPE: Journal CA

Section: 59 (Air Pollution and Industrial Hygiene) Section

cross-reference(s): 67

A reaction scheme was conceived, tested, and patented for the total oxidn. and removal of chlorinated hydrocarbons (e.g., in waste gases) by a new catalytic process. The technol. of the process, which is under development and testing, conducts oxidn. and removal in one step.

Copper and manganese are impregnated on alkali or alk.-earth carbonates, which serve as carrier and reactant for the assimilation of chlorine into a nontoxic product such as CaCl_2 or KCl . The conversions of the feed stream were detd. using online gas chromatog. Complete conversion of 100 ppm trichloroethylene is achieved at 240° and 5,000 h-1 for a period of >100 h.

Keywords

chloro hydrocarbon oxidn removal waste gas

catalyst oxidn chloroorg waste gas

copper catalyst carbonate carrier oxidn chloroorg

manganese catalyst carbonate carrier oxidn chloroorg

carbonate carrier catalyst chloroorg oxidn

chloroethylene oxidn catalyst waste gas

Index Entries

Waste gases

chlorinated hydrocarbon removal from, by catalytic oxidn. and

chlorine immobilization by potassium carbonate

Oxidation catalysts

copper and manganese, on potassium carbonate carrier, for

chlorinated hydrocarbon oxidn. and chlorine

immobilization in waste gas treatment

Hydrocarbons, miscellaneous

chloro, removal of, from waste gas by oxidn. and chlorine

immobilization, catalysts on carbonate carriers for

7439-96-5, uses

7440-50-8, uses

catalysts, on carbonate carrier, for chlorinated hydrocarbon oxidn.

in waste gas with chlorine immobilization

298-14-6

copper and manganese oxidn. catalysts contg., for chlorinated hydrocarbon removal from waste gas with chlorine immobilization
79-01-6, miscellaneous
removal of, from waste gas by oxidn. and chlorine immobilization, catalysts on carbonate carriers for

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116:101796

Immobilization of biological catalysts on sintered expanded clays for waste treatment.

Capuano, Vincenzo; Cervelli, Stefano (Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (ENEA); Consiglio Nazionale delle Ricerche, Italy). Eur. Pat. Appl. EP 462082 A2 18 Dec 1991, 22 pp.

DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE. (European Patent Organization). CODEN: EPXXDW.

CLASS: ICM: C12N011-14. ICS: C02F011-02. APPLICATION: EP

91-830258 11 Jun 1991. PRIORITY: IT 90-48058 13 Jun 1990.

DOCUMENT TYPE: Patent CA Section: 7 (Enzymes) Section

cross-reference(s): 19, 60

Sintered expanded clays are used as robust porous supports for the immobilization of enzymes, cells, or organelles for use in waste treatment. The clay may then coated with a phenolic polymer, or a phenol-enzyme copolymer, upon which other catalysts may be immobilized. Alk. phosphatase immobilized on sintered clay by adsorption retained 59% of its activity after 119 days and 24% after 504 days at 4° in buffer; stability was similar when stored at room temp.

This prepn. was added to heat-sterilized soil to return acid phosphatase levels to 40% of the starting value. The immobilization of acid phosphatase onto such a clay followed by coating the clay with pyrogalllic acid-crosslinked enzyme is demonstrated. The immobilization of b-glucosidase and cellulase by this method is demonstrated.

Keywords

clay sintered expanded enzyme immobilization
phenolic polymer clay enzyme immobilization

Index Entries

Soil amendments

biol. catalysts immobilized on porous sintered clay using phenolic polymers as

Decontamination

Water purification

biol. catalysts immobilized on porous sintered clay using phenolic polymers for use in

Wastewater

decontamination of, biol. catalysts immobilized on porous sintered clay using phenolic polymers for use in

Wastewater treatment sludge

depuration of, biol. catalysts immobilized on porous sintered clay using phenolic polymers for use in

Phenolic resins, uses

enzyme immobilization by polymn. into, adsorption onto porous sintered clays and

Clays, uses

immobilization of biol. catalysts on porous sintered, phenolic polymer crosslinking in relation to

Immobilization, biochemical

of biol. catalysts on porous sintered clays, phenolic polymer crosslinking in relation to

Fuel oil

Petroleum

waste from, depuration of, biol. catalysts immobilized on porous sintered clay using phenolic polymers for use in

110-18-9

1313-13-9, reactions

7727-54-0

9002-10-2

9003-99-0

80498-15-3

as catalyst in phenolic compd. polymn. for immobilization of enzymes on porous sintered clay

9001-22-3

9001-22-3, phenol-crosslinked

9001-77-8

9001-77-8, pyrogallol-crosslinked

9012-54-8

immobilization of, on sintered porous clay, phenolic polymers in relation to

87-66-1, copolymers with enzymes

120-80-9, copolymers with enzymes

immobilization on porous sintered clays of

7722-84-1, reactions

in phenolic compd. polymn. for immobilization of enzymes on porous sintered clay

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125:333163

Preparation of porous materials, in particular supports for immobilization of microorganisms as well as animal and plant cells.

Dawidowicz, Andrzej L. (Uniwersytet Marii Curie-Sklodowskiej, Pol.).

Pol. PL 165121 B1 30 Nov 1994, 4 pp. (Poland). CODEN: POXXA7.

CLASS: ICM: B01J020-02. ICS: B01J020-30; C03C011-00.

APPLICATION: PL 91-290687 14 Jun 1991. DOCUMENT TYPE:

Patent CA Section: 48 (Unit Operations and Processes)

The supports are prep'd. by sintering of building materials, optionally mixed with a fine-grained material and a pore precursor. A shaped body is heated at 500-1000° to burn the precursor, agglomerate the grains, and increase mech. strength. Then, the material is ground (preferably wet milled), rinsed, dried, and heated at 700-1300° to attain a glassy state. The resulting supports for immobilization of microorganisms and cells are suitable for biotechnol. processes (e.g., biocatalysis).

Keywords

catalyst biol support microorganism immobilization

cell immobilization catalyst biol support

Index Entries

Kaolin, uses

clay; in prepn. of supports for immobilization of microorganisms and cells

Glass, oxide

in prepn. of supports for immobilization of microorganisms and cells

Catalysts and Catalysis

supports, biol.; prepn. of supports for immobilization of microorganisms and cells

9067-62-3

cation exchanger; in prepn. of supports for immobilization of microorganisms and cells

7783-20-2, uses

9002-88-4
12125-02-9, uses
in prepn. of supports for immobilization of microorganisms and
cells

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123:254926

Surface immobilization of palladium catalyst in an intermeshing
co-rotating twin-screw extruder.
Orchard, S. F.; Winterbottom, J. M. (Sch. Chem. Eng., Univ.
Birmingham, Birmingham B15 2TT, UK). IChemE Res. Event--Eur.
Conf. Young Res. Chem. Eng., 1st, Volume 1, 574-6. Inst. Chem. Eng.:
Rugby, UK. (English) 1995. CODEN: 61OUA9. DOCUMENT TYPE:
Conference CA Section: 17 (Food and Feed Chemistry)
The screw 'paddles' of a twin-screw extruder have been employed as
an immobilized palladium catalyst base in order to perform soya bean
oil hydrogenation reactions. Primarily the extruder has been used as a
batch reactor (to compare with autoclave results) but ultimately as a
continuous reactor, which is an advantage of the extruder as a reactor
for this particular process by eliminating the need for catalyst sepn.
Several different coating methods have been attempted and their
feasibility established in a high pressure autoclave. Mild steel,
aluminum and stainless steel impellers (and thus screw paddles - the
individual screw sections) have been used as the immobilization base.
Reaction rates achieved have been comparable with slurry reactions
(the conventional oil hydrogenation technique) when surface area is
taken into account. SEM (SEM) has been used as a surface anal.
technique for assessing the coating quality. Studies of the durability of
the different coatings in the extruder have also been investigated with
encouraging results - the longer the catalyst is active, the less
expenditure is required when compared with a slurry catalyst. The
optimum coating method and operating conditions will be transferred to
a continuous reaction system where sufficient reaction should be
completed in one pass of the extruder barrel.

Keywords

extrusion cooking surface immobilization palladium catalyst

Index Entries

Catalysts and Catalysis

Hydrogenation

Soybean oil

surface immobilization of palladium catalyst in an intermeshing
co-rotating twin-screw extruder

Cooking

extrusion, surface immobilization of palladium catalyst in an
intermeshing co-rotating twin-screw extruder

7440-05-3, uses

surface immobilization of palladium catalyst in an intermeshing
co-rotating twin-screw extruder

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121:44946

Immobilization of spent ion-exchange resins in the urea-formaldehyde
matrix.

Rao, S. V. O.; Kothandaraman, H.; Sudhakar, M.; Lal, K. B.; Amalraj, R.
V. (Nucl. Waste Manag. Group, Bhabha At. Res. Cent., Kalpakkam 603
102, India). J. Appl. Polym. Sci., 52(9), 1263-71 (English) 1994.

CODEN: JAPNAB. ISSN: 0021-8995. DOCUMENT TYPE: Journal

CA Section: 71 (Nuclear Technology)

Studies were carried out on the immobilization of spent ion-exchange

resins produced in nuclear power plants in urea-formaldehyde matrix. The matrixes were prepd. by incorporating different types of ion-exchange resins in the pH range of 4.5 to 5.0, using boric acid as a catalyst. Characterization of the matrixes was carried out with respect to dimensional changes, compressive strength, and leach resistance. The cumulative percentage wt. loss and vol. change were obsd. to decrease with the increase in boric acid concn. before attaining a plateau. The diffusion coeffs. were in the order of 10^{-16} m²/s, and the compressive strengths were in the range of 0.83-12 MPa. IR spectral studies on the urea-formaldehyde matrixes revealed that the rate and the extent of cure depended on the type of resin.

Keywords

urea formaldehyde matrix immobilization ion exchanger
spent ion exchanger immobilization urea formaldehyde
radioactive waste ion exchanger immobilization

Index Entries

Infrared spectra
of urea-formaldehyde matrix for immobilization of ion exchanger
radioactive wastes
Leaching
of urea-formaldehyde matrix immobilized ion exchanger radioactive
wastes
Waters, potable
demineralized, leaching in, of urea-formaldehyde matrix
immobilized ion exchanger radioactive wastes
Waters, natural
ground, leaching in, of urea-formaldehyde matrix immobilized ion
exchanger radioactive wastes
Radioactive wastes
ion exchangers, immobilization of, in urea-formaldehyde matrix
10043-35-3, uses
catalyst of, in immobilization of spent ion exchangers in
urea-formaldehyde matrix
9011-05-6
immobilization in, of spent ion exchangers
156107-71-0
156107-72-1
immobilization of, in urea-formaldehyde matrix
7440-46-2, properties
10045-97-3, properties
leaching of, from urea-formaldehyde matrix immobilized spent ion
exchangers

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119:44643

Biosensor with no electrical noise for analyte concentration
determination.

Ando, Migiwa; Ookura, Tsunetoshi; Kato, Takashi (Ngk Spark Plug Co,
Japan). Jpn. Kokai Tokkyo Koho JP 05040096 A2 19 Feb 1993

Heisei, 7 pp. (Japan). CODEN: JKXXAF. CLASS: ICM: G01N021-75.

ICS: C12M001-34; G01N021-41. APPLICATION: JP 91-44442 15

Feb 1991. DOCUMENT TYPE: Patent CA Section: 9 (Biochemical
Methods)

The title biosensor is designed such that analyte and catalyst can be
immobilized on the surface, the reaction products can be dissolved and
diffuse into the inside matrix, and with a light transmittable surface on
the biosensor, the concn. of the analyte can be detd. The invention
provides an assay with no elec. noise, high sensitivity, and good
reliability. Thus, glucose oxidase was immobilized on the surface of
porous silicon covered by alumina coating of a biosensor for glucose

detn. in blood serum. A diagram of the biosensor is included.

Keywords

biosensor catalyst analyte immobilization
glucose biosensor porous silicon

Index Entries

Catalysts and Catalysis

immobilization of analyte and, in biosensor, for analyte concn.
detn.

Biosensors

immobilization of catalyst and analyte in, for analyte concn. detn.

Immobilization, biochemical

of catalyst and analyte in biosensor, for analyte concn. detn.

1344-28-1, biological studies

coating, in glucose biosensor, analyte and catalyst

immobilization in relation to

50-99-7, analysis

detn. of, in blood, with biosensor with immobilized glucose oxidase
9001-37-0

immobilization of, on biosensor surface, for glucose detn. in blood

7440-21-3, biological studies

porous, glucose oxidase immobilized on, in biosensor, for glucose
detn., in blood

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125:12144

Synthesis and immobilization of undecenylloxy-methyl benzocrown
ether and catalytic-properties of the immobilized product for
hydrosilylation of olefins.

Lu, Xueren; Zhang, Lifeng; Duan, Heping; Chen, Yuanyin (Dep. of
Chemistry, Wuhan Univ., Wuhan 430072, Peop. Rep. China). Gaofenzi
Xuebao, (2), 189-194 (Chinese) 1996. CODEN: GAXUE9. ISSN:

1000-3304. DOCUMENT TYPE: Journal CA Section: 37 (Plastics

Manufacture and Processing) Section cross-reference(s): 67

Two new benzocrown ethers,

9-undecenylloxymethyl-2,3-benzo-15-crown-5 and 18-crown-6, were

synthesized from 1,2-bis(hydroxyethoxy)benzene bistosylate and

corresponding undecenylloxymethyl polyethylene glycol via

cyclocondensation in 22 and 20% yield, resp. The crown ethers were

subjected to hydrosilylation by triethoxysilane, followed by

immobilization on fumed silica, and then reaction with potassium

platinate in acetone under nitrogen atm. The platinum complexes

exhibited very high catalytic activity for the hydrosilylation of olefins with

triethoxysilane. The hydrosilylation of decene took place even the amt.

of silica-bound benzo-15-crown-5 platinum complex used was low as

1'10-5mmol of Pt. In such a case, th decene used was 5.0 mmol, the

yield of decyltriethoxysilane was about 77%, and the turnover no. was

as high as 380,000.

Keywords

undecenylloxymethyl benzocrown ether hydrosilylation catalyst prepn

immobilization crown ether platinum hydrosilylation catalyst

decene hydrosilylation crown ether platinum catalyst

olefin hydrosilylation crown ether platinum catalyst

Index Entries

Hydrosilylation catalysts

prepn. and immobilization of undecenylloxy-Me benzocrown ether
and catalytic-properties for hydrosilylation of olefins

Crown compounds

ethers, platinum complexes, prepn. and immobilization of
undecenyl-oxy-Me benzocrown ether and
catalytic-properties for hydrosilylation of olefins
177579-34-9, reaction products with triethoxysilane, silica and
potassium platinate
177579-35-0, reaction products with triethoxysilane, silica and
potassium platinate
998-30-1
25339-53-1
177579-34-9
177579-35-0
2943-73-9
prepn. and immobilization of undecenyl-oxy-Me benzocrown ether
and catalytic-properties for hydrosilylation of olefins

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124:291505

Immobilization of enzymes onto modified polyacrylonitrile
membranes: application of the acyl azide method.

Hicke, Hans-Georg; Boehme, Peter; Becker, Margot; Schulze, Heike;
Ulbricht, Mathias (GKSS Forschungszentrum Geesthacht GmbH, Inst.
Chem., Teltow D-14513, Germany). J. Appl. Polym. Sci., 60(8),
1147-61 (English) 1996. CODEN: JAPNAB. ISSN: 0021-8995.

DOCUMENT TYPE: Journal CA Section: 38 (Plastics Fabrication and
Uses)

Chem. reactions toward acyl azide activated polyacrylonitrile (PAN)
and conditions for membranes surface modifications are described.
Ultrafiltration (UF) membranes were prepd. from PAN homopolymer
and copolymer with Me acrylate. Besides hydrazide formation and
nitrosation, a new method to introduce acyl azide groups into carboxyl
modified PAN, using azido transfer with di-Ph phosphoryl azide, was
developed. Chem. conversions were characterized, esp. with Fourier
transform IR spectroscopy. The heterogeneous modifications are not
chem. selective due to side reactions and/or incomplete conversion.
The pore structure is altered predominantly via modified polymer
swelling causing changed UF fluxes and selectivities. However, for the
modification via PAN reaction with hydroxyl amine, acid hydrolysis, and
azido transfer, the initial membrane sepn. performance is qual.
preserved. Using the acyl azide method, amyloglucoside (AG) (EC
3.2.1.3) was immobilized onto the modified PAN UF membranes,
enabling hydrolysis of starch or maltose to glucose. Enzyme activity
was assayed depending on previous chem. modification (azide
content) and immobilization (pH) conditions as well as hydrolysis
parameters (substrate, conversion during diffusion or UF). The best
results (up to 600 mU/cm² at 40° and pH 5.0) were obtained after
modification of PAN membranes via carboxyl creation and azido
transfer. AG covalently bound to PAN is not influenced much in its
catalytic properties ($K_m = 3.48$ and 3.1 mmol/L for free and bound AG,
resp., with maltose at 40°C and pH 5.0). Under UF conditions, AG
effective activity can be improved by the convective flow through the
membrane. UF selectivity for the polymer starch dets. effective
substrate concns. in the membrane, thus affecting obsd. activities and
product purities in the filtrate.

Keywords

immobilization enzyme acyl azide polyacrylonitrile membrane

Index Entries

Aspergillus niger
Polymer morphology
immobilization of enzymes onto acyl azide-modified

polyacrylonitrile membranes
 Hydrolysis catalysts
 immobilization of enzymes onto acyl azide-modified
 polyacrylonitrile membranes as hydrolysis catalyst
 Filters and Filtering materials
 ultra-, membranes, immobilization of enzymes onto acyl
 azide-modified polyacrylonitrile membranes
 24968-79-4, acyl azide derivs.
 25014-41-9, acyl azide derivs.
 9032-08-0
 immobilization of enzymes onto acyl azide-modified
 polyacrylonitrile membranes
 69-79-4
 9005-25-8, reactions
 immobilization of enzymes onto acyl azide-modified
 polyacrylonitrile membranes as hydrolysis catalyst

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122:291723

Studies on the heterogenization of the homogeneous organic nickel catalyst.

Luan, Jiaguo; Qian, Junlu; Li, Sen (Dep. Chem., Tongji Univ., Shanghai 200092, Peop. Rep. China). Tongji Daxue Xuebao, Ziran Kexueban, 22(3), 365-70 (Chinese) 1994. CODEN: TTHPDJ. ISSN: 0253-374X.

DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 45, 67

The structure of

{a-[(diphenylphosphino)methylene]benzene-methanolato-O.P.} (phenyl)(triphenylphosphine)nickel is bound over OP-chelate ligand to polystyrene by a five-step process, which consists of acetylation of polystyrene to form poly(4-acetylstyrene) (V); bromination of V to give poly(4-bromoacetylstyrene) (VI); reaction of VI with triphenylphosphine to form poly(vinylphenacyltriphenylphosphonium bromide) (VII); dehydrobromination of VII to give poly (vinyltriphenylphosphine benzoylmethylene) (VIII); and finally, reaction of VIII in the presence of triphenylphosphine with bis-(1,5-cyclooctadiene)nickel to give the target compd.

poly(vinylphenacyldiphenylphosphine)(phenyl)(triphenylphosphine)nickel (IX). For the catalysis of the 1,5-hexadiene to form methylene cyclopentane as main product, the activity of the polymer-immobilized complex is as good as the homogeneous species and it can be reused. The effects of solvent, the diene-catalyst ratio, and the reaction time for the isomerization are also studied

Keywords

nickel immobilization modified polystyrene substrate catalyst
 hexadiene nickel ring closure catalyst methylenecyclopentane
 polymer supported catalyst ring closure hexadiene

Index Entries

Ring closure catalysts

polystyrene deriv.-immobilized nickel catalyst for ring closure of hexane in prepn. of methylenecyclopentane

7440-02-0, complexes with polystyrene derivs.

9003-53-6, derivs., nickel complexes

catalyst; prepn. of modified polystyrene-immobilized nickel catalyst for ring closure of hexane in prepn. of

methylenecyclopentane

592-42-7

1528-30-9

polystyrene deriv.-immobilized nickel catalyst for ring closure of hexane in prepn. of methylenecyclopentane

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116:3220

Acyl cardiolipins for liposome immobilization of amino group-containing ligands.

Niedermann, Gabriele; Weissig, Volkmar; Lasch, Juergen (Martin-Luther-Universitaet Halle-Wittenberg, Germany). Ger. (East)

DD 293264 A5 29 Aug 1991, 4 pp. (German Democratic Republic).

CODEN: GEXXA8. CLASS: ICM: A61K037-22. ICS: C07K017-02.

APPLICATION: DD 90-339239 30 Mar 1990. DOCUMENT TYPE:

Patent CA Section: 9 (Biochemical Methods) Section

cross-reference(s): 3, 7, 33, 63

Cardiolipins for use in liposomes for covalent binding of amino group-contg. ligands are prepd. by acylation of cardiolipin with succinic acid or glutaric anhydride in the presence of 4-dimethylaminopyridine catalyst. The liposomes can be used in immunoassays, pharmaceuticals, for transport of genetic material into cells, and in vaccines as adjuvants (no data). Thus, a-chymotrypsin was immobilized on liposomes contg. O-succinyl cardiolipin. Markush structures are provided.

Keywords

acyl cardiolipin liposome ligand immobilization

Index Entries

Liposome

amino group-contg. ligand immobilization on, acyl cardiolipins for, prepn. of

Ligands

amino group-contg., immobilization of, on liposomes, acyl cardiolipins for, prepn. of

Cardiolipins

acyl, prepn. of, for amino group-contg. ligand immobilization on liposomes

1122-58-3

as catalyst, for acylation of cardiolipins for liposomes, amino group-contg. ligand immobilization in relation to

9004-07-3

immobilization of, on liposomes, acyl cardiolipin prepn. for

108-55-4, reaction products with cardiolipins

110-15-6, reaction products with cardiolipins

prepn. of, for amino group-contg. ligand immobilization on liposomes

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124:87952

Attaching of poly(acrylic acid) to inorganic surface and its application to enzyme immobilization.

Shimomura, Masato; Kikuchi, Hiroaki; Matsumoto, Hiroshi; Yamauchi, Takeshi; Miyauchi, Shinnosuke (Department of Bioengineering,

Nagaoka University of Technology, Nagaoka 940-21, Japan). Polym.

J. (Tokyo), 27(9), 974-77 (English) 1995. CODEN: POLJB8. ISSN:

0032-3896. DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of

Synthetic High Polymers) Section cross-reference(s): 7

Poly(acrylic acid) chains were attached to the surfaces of magnetite and silica gel particles by the redox polymn. using ceric ammonium nitrate. The surface was treated with 3-mercaptopropyltrimethoxysilane prior to the polymn. Glucose oxidase was surface-immobilized by the condensation with carboxyl groups of surface-attached polymers.

Keywords

glucose oxidase immobilization grafted polyacrylic acid
magnetite grafted polyacrylic acid enzyme immobilization
silica grafted polyacrylic acid enzyme immobilization
redox surface graft polymn acrylic acid

Index Entries

Polymerization

graft, redox, poly(acrylic acid) attached to inorg. surface by redox
polymn. as substrate for enzyme immobilization
10139-51-2
catalyst; poly(acrylic acid) attached to inorg. surface by redox
polymn. as substrate for enzyme immobilization
4420-74-0
1309-38-2, preparation
9003-01-4
168564-56-5
9001-37-0
poly(acrylic acid) attached to inorg. surface by redox polymn. as
substrate for enzyme immobilization

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121:3913

Enzymic phosphatidylcholine hydrolysis in organic solvents: an
examination of selected commercially available lipases.
Haas, M. J.; Scott, K.; Jun, W.; Janssen, G. (ARS, ERRC, Philadelphia,
PA 19118, USA). J. Am. Oil Chem. Soc., 71(5), 483-90 (English)
1994. CODEN: JAOCA7. ISSN: 0003-021X. DOCUMENT TYPE:
Journal CA Section: 7 (Enzymes) Section cross-reference(s): 17
Eight com. lipase preps. were examd. for the ability to hydrolyze
phosphatidylcholine (PC) in hexane solns. Only the enzymes from
Humicola lanuginosa, Rhizopus delemar and Candida rugosa
displayed appreciable activity. Solvent polarity was the largest single
factor affecting activity the H. lanuginosa sample was most active in
polar solvents. The R. delemar prep. was most active in polar
(2-hexanone) and nonpolar (decane) solvents and least active in
solvents of intermediate polarity (hexane). The solvent dependence of
the activity of the C. rugosa enzyme varied with the ratio of substrate to
enzyme. Different degrees of activity were retained by the three
enzymes after passive immobilization of Celite, controlled-pore glass,
polypropylene and Amberlite XAD-7 resins. No single resin yielded the
best retained activity for all three preps. When examd. in 2-octanone,
hexane and isooctane, the Celite-immobilized R. delemar and H.
lanuginosa enzymes exhibited highest activity in 2-octanone, while
immobilized C. rugosa was most active in isooctane. The water
content at which max. activity was obsd. was relatively independent of
solvent polarity and the amt. of catalyst but was proportional to the amt.
of PC in the reaction. The retention of activity by immobilized
Rhizomucor miehei lipase (Lipozyme) during multiple hydrolytic cycles
required a redn. in the water content of the system below that yielding
optimal activity in a single cycle.

Keywords

phosphatidylcholine hydrolysis com lipase solvent
immobilization lipase phosphatidylcholine hydrolysis

Index Entries

Glass, oxide
controlled-pore, lipase immobilization on, phosphatidylcholine
hydrolysis response to
Phosphatidylcholines, reactions

hydrolysis of, with com. lipases in org. solvents, immobilization in relation to
 Candida rugosa
 Humicola lanuginosa
 Rhizopus delemar
 lipase from, phosphatidylcholine hydrolysis by, immobilization and org. solvent in relation to
 Kieselguhr
 lipase immobilization on, phosphatidylcholine hydrolysis response to
 Immobilization, biochemical
 of lipases, phosphatidylcholine hydrolysis response to
 Solvents
 polarity of, phosphatidylcholine hydrolysis by lipases response to
 7732-18-5, biological studies
 immobilized lipase activity requirement for, catalyst and
 phosphatidylcholine concn. in relation to
 9003-07-0
 37380-43-1
 lipase immobilization on, phosphatidylcholine hydrolysis response to
 9001-62-1, immobilized
 phosphatidylcholine hydrolysis by
 110-54-3, uses
 111-13-7
 124-18-5
 540-84-1
 591-78-6
 phosphatidylcholine hydrolysis by lipases in
 9001-62-1
 phosphatidylcholine hydrolysis by, in org. solvents

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125:276188

Preparation of silylated ferrocene-diphosphine ligands, silica gel- and organic polymeric-bound derivatives and polymeric iridium and rhodium complexes and catalysis of hydrogenation of alkenes and ketimines by the complexes.

Pugin, Benoit (Ciba-Geigy A.-G., Switz.). Eur. Pat. Appl. EP 729969 A1 4 Sep 1996, 34 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE. (European Patent Organization). CODEN: EPXXDW. CLASS: ICM: C07F017-02. ICS: C07B031-00; C01B033-20; C08F112-08; C08F110-00; C08F120-10; C08F136-08; C08F136-06; C08G069-00; C08G018-83; B01J021-00; C07B053-00. APPLICATION: EP 96-810094 16 Feb 1996. PRIORITY: CH 95-543 24 Feb 1995. DOCUMENT TYPE: Patent CA Section: 29 (Organometallic and Organometalloidal Compounds) Section cross-reference(s): 21, 35, 67

The prepn. is described of silylated ferrocene-diphosphine ligands I, their silica gel- and org. polymer-bound derivs., and Ir and Rh complexes of the bound ligands. In I, R1 = C1-8 alkyl, Ph, or Ph substituted with 1-3 C1-4 alkyl or alkoxy groups; R2, R3, R10, R11 = independently C1-12 alkyl, C5-12 cycloalkyl, Ph, substituted phenyl; HPR2R3 and HPR10R11 = independently dibenzophosphole, phosphole, 9-phosphabicyclo[3.3.1]nonane, and 9-phosphabicyclo[4.2.1]nonane; R12 = same or different C1-12 alkyl, C3-7 cycloalkyl, benzyl, Ph; R13 = C1-12 alkyl or Ph. The metal complexes were used as hydrogenation catalysts for org. double and triple bonds, esp. olefinic and C-heteroatom double bonds; they also catalyze enantioselective hydrogenation of prochiral unsatd. compds. when chiral diphosphine derivs. are used. For example, II (X = NMe2; X1 = Cl) was prepd. in 55% yield from (R)-N,N-dimethyl-1-ferrocenylethylamine, BuLi, TMEDA, ClPPh2, and Me2Si(CH2CH2CH2Cl)Cl and converted to II (X = Pxyl2,

PtBu₂, Pcy₂; X₁ = Cl) in 52, 77, and 75% yields by reactions with secondary phosphines; the latter were converted to II (X = Pxyl₂, PtBu₂, Pcy₂; X₁ = NH₂) in ~90% yields by the Gabriel method via phthalimides; the amines were then converted to II (X = Pxyl₂, PtBu₂, Pcy₂; X₁ = NHC(O)NHCH₂CH₂CH₂Si(OEt)₃) in 74, 72 and 70% yields using (EtO)₃SiCH₂CH₂CH₂NCO, which in turn were immobilized on silica gel (± 0.62% P). One of these immobilized ligands and [Rh(COD)₂]BF₄ formed a catalyst for enantioselective hydrogenation of N-(2,6-dimethylphenyl)-N-(methoxyacetyl)-1-methoxycarbonyl-ethenylamine in 82% optical yield.

Keywords

silylferrocenylphosphine immobilized iridium rhodium hydrogenation catalyst
 phosphine silylferrocenyl immobilized complex hydrogenation catalyst
 ferrocenylphosphine silyl immobilized complex hydrogenation catalyst
 alkene enantioselective hydrogenation immobilized
 silylferrocenylphosphine complex
 ketimine enantioselective hydrogenation immobilized
 silylferrocenylphosphine complex
 enantioselective hydrogenation catalyst immobilized
 silylferrocenylphosphine complex
 polymer bound silylferrocenylphosphine complex hydrogenation catalyst
 silica gel silylferrocenylphosphine complex hydrogenation catalyst

Index Entries

Stereochemistry

of hydrogenation of alkenes and ketimines by immobilized iridium and rhodium silyl(phosphinoethyl)ferrocenylphosphine complexes

Alkenes, reactions

prepn. of silylated ferrocene-diphosphine ligands, silica gel- and org. polymeric-bound derivs. and polymeric iridium and rhodium complexes and catalysis of hydrogenation of alkenes and ketimines by complexes

Imines

ket-, prepn. of silylated ferrocene-diphosphine ligands, silica gel- and org. polymeric-bound derivs. and polymeric iridium and rhodium complexes and catalysis of hydrogenation of alkenes and ketimines by complexes

Silica gel, preparation

reaction products, prepn. of silylated ferrocene-diphosphine ligands, silica gel- and org. polymeric-bound derivs. and polymeric iridium and rhodium complexes and catalysis of hydrogenation of alkenes and ketimines by complexes

Hydrogenation catalysts

stereoselective, prepn. of silylated ferrocene-diphosphine ligands, silica gel- and org. polymeric-bound derivs. and polymeric iridium and rhodium complexes and catalysis of hydrogenation of alkenes and ketimines by complexes

109-73-9, reactions

for conversion of (chloropropyl)silylferrocenylphosphine deriv. to amine

1074-82-4

for conversion of (chloropropyl)silylferrocenylphosphine derivs. to amines

1079-66-9

10605-40-0

for derivatization of ferrocenylethylamine

182227-20-9

182227-23-2

182227-25-4

prepn. and Gabriel conversion to amine
 182227-46-9
 182227-49-2
 182227-73-2
 prepn. and conversion to amine
 584-84-9, reaction products with aminomethylated,
 divinylbenzene-cross-linked polystyrene and
 ((aminopropyl)silyl)(phosphinoethyl)ferrocenylphosphine, iridium
 complex
 9003-53-6, aminomethylated, divinylbenzene-cross-linked, reaction
 products with 2,4-toluenediisocyanate and
 ((aminopropyl)silyl)(phosphinoethyl)ferrocenylphosphine, iridium
 complex
 182227-28-7, reaction products with aminomethylated,
 divinylbenzene-cross-linked polystyrene and 2,4-toluenediisocyanate,
 iridium complex
 prepn. and hydrogenation catalysis by
 182227-39-0
 182227-40-3
 182227-42-5
 182227-43-6
 prepn. and immobilization on silica gel
 182227-28-7
 182227-30-1
 182227-33-4
 182227-36-7
 prepn. and reaction with (triethoxysilyl)isocyanatopropane
 182227-18-5
 prepn. and reactions with secondary phosphines
 137695-36-4
 182227-40-3, reaction products with silica gel, iridium complex
 182227-43-6, reaction products with silica gel, iridium complex
 prepn. of
 12112-67-3
 35138-22-8
 182227-39-0, reaction products with silica gel, iridium complex
 182227-42-5, reaction products with silica gel, rhodium complex
 98166-03-1
 118604-68-5
 70630-17-0
 118604-70-9
 prepn. of silylated ferrocene-diphosphine ligands, silica gel- and
 org. polymeric-bound derivs. and polymeric iridium and
 rhodium complexes and catalysis of hydrogenation of
 alkenes and ketimines by complexes
 819-19-2
 829-84-5
 71360-06-0
 reaction with (silyl)(phosphino)ferrocenylethylamine
 31886-57-4
 31886-58-5
 reaction with butyllithium followed by chlorodiphenylphosphine and
 (chloropropyl)chlorodimethylsilane
 24801-88-5
 reactions with ((aminopropyl)silyl)ferrocenylphosphine derivs.

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125:52353

Tyrosinase-containing chitosan gels: a combined catalyst and sorbent
 for selective phenol removal.

Sun, Wei-Qiang; Payne, Gregory F. (Cent. Agricultural Biotechnol.,
 Univ. Maryland Baltimore County, Baltimore, MD 21228, USA).

Biotechnol. Bioeng., 51(1), 79-86 (English) 1996. CODEN: BIBIAU.

ISSN: 0006-3592. DOCUMENT TYPE: Journal CA Section: 7

(Enzymes) Section cross-reference(s): 60

There are a series of examples in which phenols appear as contaminants in process streams and their selective removal is required for waste minimization. For the selective removal of a phenol from a mixt., we are exploiting the substrate specificity of the enzyme tyrosinase to convert phenols into reactive o-quinones which are then adsorbed onto the amine-contg. polymer chitosan. To effectively package the enzyme and sorbent, tyrosinase was immobilized between two chitosan gel films. The entrapment of tyrosinase between the films led to little loss of activity during immobilization, while tyrosinase leakage during incubation was limited. The chitosan gels rapidly adsorb the tyrosinase-generated product(s) of phenol oxidn. while the capacity of the gels is substantially greater than the capacity of chitosan flakes. The performance of tyrosinase-contg. chitosan gels significantly depends on the ratio of tyrosinase-to-chitosan. High tyrosinase-to-chitosan ratios result in less efficient use of tyrosinase, presumably due to suicide inactivation. However, the efficiency of chitosan use increases with increased tyrosinase-to-chitosan ratios.

Keywords

tyrosinase immobilization chitosan phenol removal waste

Index Entries

Adsorption

Immobilization, biochemical

Phenols, biological studies

immobilization of tyrosinase in chitosan gels for selective phenol waste removal from process streams

Quinones

ortho-, immobilization of tyrosinase in chitosan gels for selective phenol waste removal from process streams

9012-76-4

immobilization of tyrosinase in chitosan gels for selective phenol waste removal from process streams

9002-10-2, immobilized

9002-10-2

tyrosinase; immobilization of tyrosinase in chitosan gels for selective phenol waste removal from process streams

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123:192322

Immobilization of glucosyltransferase from Aureobasidium.

Hayashi, Sachio; Ueda, Yasuhiro; Kobayashi, Goichi; Takasaki, Yoshiyuki; Imada, Kiyohisa (Faculty Engineering, Miyazaki University, Miyazaki 889-21, Japan). J. Ind. Microbiol., 14(5), 377-81 (English) 1995. CODEN: JIMIE7. ISSN: 0169-4146. DOCUMENT TYPE:

Journal CA Section: 7 (Enzymes) Section cross-reference(s): 9

Glucosyltransferase from Aureobasidium, which produces panose and isomaltose from maltose, was immobilized by alginate gel or DEAE-cellulose at high efficiency (71 and 41% resp.). Alkylamine porous silica was less efficient as a support. The enzymic profiles of immobilized enzymes were almost identical to the native one except that their stabilities to extreme pH, metal ions and inhibitors were improved. Both immobilization procedures successfully produced high amts. of panose, 125 mg mL⁻¹ (alginate gel) or 141 mg mL⁻¹ (DEAE-cellulose), from 300 mg mL⁻¹ of maltose.

Keywords

Aureobasidium glucosyltransferase immobilization

panose manuf immobilized glucosyltransferase Aureobasidium

Index Entries

Aureobasidium
 Immobilization, biochemical
 comparison of immobilization methods for glucosyltransferase
 from Aureobasidium for use in isomalto-oligosaccharide
 manuf.
 9005-32-7
 9013-34-7
 7631-86-9, alkylamine derivs.
 catalyst support; comparison of immobilization methods for
 glucosyltransferase from Aureobasidium for use in
 isomalto-oligosaccharide manuf.
 9030-12-0
 9030-12-0, immobilized
 33401-87-5
 111-30-8
 comparison of immobilization methods for glucosyltransferase
 from Aureobasidium for use in isomalto-oligosaccharide
 manuf.

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123:136595
 Immobilization of biocatalyst with membrane.
 Jiang, Zhongyi; Chen, Hongfang (Department Chemical Engineering,
 Tianjin University 300072, Peop. Rep. China). Xiandai Huagong,
 15(5), 11-13, 24 (Chinese) 1995. CODEN: HTKUDJ. ISSN:
 0253-4320. DOCUMENT TYPE: Journal; General Review CA Section:
 7 (Enzymes) Section cross-reference(s): 9, 67
 A review, with 4 refs. Artificial membrane, due to their excellent
 structure characteristics, have found an increasing application in the
 immobilization of biocatalyst. In this paper, the style and the method of
 biocatalyst immobilization with membrane were reviewed in detail, the
 development tendency and the application fields were also introduced
 in brief.

Keywords

review biocatalyst membrane immobilization
 catalyst membrane immobilization review

Index Entries

Catalysts and Catalysis
 Immobilization, biochemical
 Membranes
 Enzymes
 immobilization of biocatalyst with membrane
 Membrane, biological
 bilayer, immobilization of biocatalyst with membrane

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121:208019
 Immobilization on a polymer substrate in manufacture of a catalyst
 for urethane formation.
 Berlin, Petr A.; Ptitsyna, Nelli V.; Samigullin, Faat K.; Tiger, Roald P.;
 Entelis, Sergej G. (Institute of Chemical Physics, Academy of
 Sciences, U.S.S.R., USSR). U.S.S.R. SU 1792739 A1 7 Feb 1993
 From: Izobreteniya 1993, (5), 22. (Union of Soviet Socialist Republics).
 CODEN: URXXAF. CLASS: ICM: B01J037-00. ICS: C08G018-24.
 APPLICATION: SU 90-4843301 26 Jun 1990. DOCUMENT TYPE:
 Patent CA Section: 45 (Industrial Organic Chemicals, Leather, Fats,
 and Waxes)

The catalyst having a controlled activity is prepd. with immobilization on a linear polymer substrate. The catalyst sepn. from the reaction mixt. is simplified when the immobilized catalyst is converted from water-sol. into a dispersed form by the urethane synthesis in solvent consisting of benzene and heptane at 50:(5-95) vol. ratio.

Keywords

urethane synthesis catalyst dispersion
heptane solvent urethane synthesis catalyst

Index Entries

Urethane polymers, preparation
synthesis; with catalyst immobilization on polymer substrate
71-43-2, uses
142-82-5, uses
solvent; for catalyst dispersion in urethane synthesis

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121:188336

Immobilization and characterization of porphyrin and study of its catalytic capability.

Wang, Xing-Qiao; Gao, Shuang; Liu, Yu-Wen; Yu, Lian-Xiang; Liu, Yang; Cao, Xi-Zhang; Wu, Zhi-Yun; Cui, Yue-Yong (Dep. Chem., Jilin Univ., Changchun 130023, Peop. Rep. China). Gaodeng Xuexiao Huaxue Xuebao, 15(6), 789-93 (Chinese) 1994. CODEN: KTHPDM.

ISSN: 0251-0790. DOCUMENT TYPE: Journal CA Section: 67

(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 78

A stepwise synthesis method was used to encapsulate tetrahalogen-tetramethyl porphyrins in the supercages of NaCoX mol. sieve. The resulting samples were washed with DMF in a Soxhlet extractor until the porphyrin which deposited on the external surface of mol. sieve was removed completely. Characterization of TCTMP and TBTMP was made by the methods of UV-Vis, IR, SEM, DTA and absorption. Catalytic capabilities of porphyrin, mol. sieve and NaCoX mol. sieve with supercage structure in which porphyrin was entrapped were compared.

Keywords

immobilization characterization porphyrin zeolite NaCoX catalyst

Index Entries

Catalysts and Catalysis

Oxidation catalysts

immobilization and characterization of porphyrin in zeolite NaCoX for

Zeolites, uses

CoNaX, immobilization and characterization of porphyrin in zeolite NaCoX for catalysts

7193-68-2

157848-42-5

immobilization and characterization of porphyrin in zeolite NaCoX for catalysts

100-42-5, reactions

immobilization and characterization of porphyrin in zeolite NaCoX for oxidn. catalysts for

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118:97120

Properties of amylase immobilized on a new reversibly soluble-insoluble polymer and its application to repeated hydrolysis of soluble starch.

Hoshino, Kazuhiro; Taniguchi, Masayuki; Katagiri, Masafumi; Fujii, Michihiro (Dep. Mater. Chem. Eng., Niigata Univ., Niigata 950-21, Japan). J. Chem. Eng. Jpn., 25(5), 569-74 (English) 1992. CODEN: JCEJAO. ISSN: 0021-9592. DOCUMENT TYPE: Journal CA Section:

7 (Enzymes)

A copolymer of glycidyl methacrylate (GMA) and N-iso-Pr acrylamide (NIPAM) forms a reversibly sol.-insol. (S-IS) polymer (GMA-NIPAM), whose soly. changes with the temp. of the soln. An amylase (Dabiase) was immobilized on GMA-NIPAM under alk. conditions. The specific activity of Dabiase immobilized on GMA-NIPAM (D-GN) for saccharification of sol. starch was 90% that of native Dabiase and higher than that of conventional solid immobilized enzymes. D-GN was sol. below 32° but insol. above 44°. When NaCl was added to a buffer soln. (pH 5.0) with D-GN, the soly. response of D-GN to change in temp. was more sensitive than that in buffer soln. without NaCl. In addn., the temp. causing half of the max. turbidity decreased by about 2.3° whenever the NaCl concn. of the buffer soln. was increased by 1%.

D-GN was used successively for repeated hydrolysis reactions of sol. starch, in which D-GN was insolubilized not only by elevating the temp. of the reaction mixt. from 30° to 38° in the presence of 1% NaCl, but also by adjusting the NaCl concn. of the reaction mixt. to 4% at 30°, followed by its batchwise recovery from a reaction product by centrifugation.

Keywords

amylase immobilization reversible sol insol polymer

Index Entries

Michaelis constant

of amylase immobilized form

111158-24-8

amylase immobilization on, for repeated hydrolysis of sol. starch, catalyst recovery based on polymer soly. properties in relation to

7647-14-5, biological studies

glycidyl methylacrylate/isopropylacrylamide copolymer soly.

response to, amylase immobilization and catalyst

recovery in relation to

9005-84-9

hydrolysis of, by amylase immobilized on reversibly sol.-insol. polymer

9000-92-4

immobilization of, for repeated hydrolysis of sol. starch, catalyst recovery based on polymer soly. properties in relation to

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117:127353

A two-phase method to produce gel beads: application in the design of a whole cell b-galactosidase catalyst.

Castillo, E.; Ramirez, D.; Casas, L.; Lopez-Munguia, A. (Cent. Invest. Ing. Genet. Biotechnol., UNAM, Cuernavaca 62271, Mex.). Appl.

Biochem. Biotechnol., 34-35, 477-86 (English) 1992. CODEN:

ABIBDL. ISSN: 0273-2289. DOCUMENT TYPE: Journal CA Section:

7 (Enzymes) Section cross-reference(s): 9, 16

A method for producing entrapped whole cell biocatalysts is described.

The procedure consists of the direct mixing of a gel suspension with an oily phase. Three biopolymers are used: gelatin, agar, and carrageenan using Kluyveromyces fragilis cells contg. b-galactosidase activity as a design model. For a given gel type and

concn., the bead's particle size is a direct function of the agitation rate and the type of impeller, as well as the geometry of the system. Therefore, the particle size distribution is obtained as a function of the impeller's Reynolds no. in order to define a scale-up criteria. The b-galactosidase biocatalyst is characterized considering the effect of particle size and substrate concn. on the effectiveness factor. This method does not require the usual extrusion equipment and, as shown here, is adequate for scaling up.

Keywords

immobilization beta galactosidase contg cell gel
Kluyveromyces galactosidase contg entrapment gel bead

Index Entries

Gelatins, uses
beads, galactosidase-contg. Kluyveromyces fragilis
immobilization by entrapment in
Kluyveromyces marxianus marxianus
galactosidase-contg., immobilization of
Immobilization, biochemical
of galactosidase-contg. Kluyveromyces fragilis
9000-07-1
9002-18-0
beads, galactosidase-contg. Kluyveromyces fragilis
immobilization by entrapment in
9031-11-2
Kluyveromyces fragilis contg., immobilization of, by entrapment
in gel beads

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125:85186

A very efficient b-glucosidase catalyst for the hydrolysis of flavor precursors of wines and fruit juices.

Gueguen, Yannick; Chemardin, Patrick; Janbon, Guilhem; Arnaud, Alain; Galzy, Pierre (Ecole Nationale Supérieure Agronomique de Montpellier, Montpellier 34060, Fr.). J. Agric. Food Chem., 44(8), 2336-2340 (English) 1996. CODEN: JAFCAU. ISSN: 0021-8561.

DOCUMENT TYPE: Journal CA Section: 17 (Food and Feed Chemistry)

Candida molischiana 35M5N b-glucosidase was immobilized to Duolite A-568 resin. Higher immobilization efficiency (86%) was achieved with citrate-phosphate buffer (0.1M) at pH 4. The study of the immobilized b-glucosidase demonstrated that the physicochem. properties were similar to those of the free enzyme. Free and immobilized b-glucosidase were used to treat muscat wine and apricot fruit juice. GC-MS anal. indicated a significant increase in the flavor compds. nerol, geraniol, linalool, 2-phenylethanol, and benzyl alc. in the muscat wine and linalool, a- and g-terpinene, a-terpineol, 2-phenylethanol, and a-pinene in the apricot fruit juice. The immobilized b-glucosidase was very stable under fruit juice or wine conditions and could be used repeatedly for several hydrolyses of bound aroma. The efficiency of this exptl. catalyst was successfully tested with several fruit juices and wines contg. various amts. of precursors.

Keywords

glucosidase flavor prodn wine juice

Index Entries

Immobilization, biochemical

Candida molischiana 35M5N b-glucosidase was immobilized to
 Duolite A-568 resin
 Flavor
 Fruit and vegetable juices
 Wine
 b-glucosidase catalyst for the hydrolysis of flavor precursors of
 wines and fruit juices
 Apricot
 juice, b-glucosidase catalyst for the hydrolysis of flavor precursors
 of wines and fruit juices
 Wine
 muscatel, b-glucosidase catalyst for the hydrolysis of flavor
 precursors of wines and fruit juices
 60-12-8
 78-70-6
 80-56-8
 98-55-5
 99-85-4
 99-86-5
 100-51-6, biological studies
 106-24-1
 106-25-2
 9001-22-3
 b-glucosidase catalyst for the hydrolysis of flavor precursors of
 wines and fruit juices

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123:309445

Screening of concanavalin A-bead cellulose conjugates by an enzyme
 thermistor using immobilized invertase as the reporter catalyst.
 Docolomansky, Peter; Gemeiner, Peter; Mislovicova, Danica; Stefuca,
 Vladimir; Danielsson, Bengt (Institute Molecular Physiology and
 Genetics, Slovak Academy Sciences, Bratislava SK-833 34, Slovakia).
 Ann. N. Y. Acad. Sci., 750(Enzyme Engineering XII), 441-3 (English)
 1995. CODEN: ANYAA9. ISSN: 0077-8923. DOCUMENT TYPE:
 Journal CA Section: 7 (Enzymes) Section cross-reference(s): 9
 The utility of enzyme thermistor for the characterization of immobilized
 enzymes was tested. As a test system, strong biospecific binding was
 analyzed using the formation of a complex between immobilized Con A
 and invertase, a representative of the broad family of glycoenzymes
 bearing carbohydrate moieties.

Keywords

immobilized enzyme thermistor ConA invertase

Index Entries

Immobilization, biochemical
 screening of Con A-bead cellulose conjugates by an enzyme
 thermistor using immobilized invertase as the reporter
 catalyst
 Enzymes
 immobilized, screening of Con A-bead cellulose conjugates by an
 enzyme thermistor using immobilized invertase as the
 reporter catalyst
 Electric resistors
 thermistors, enzymic; screening of Con A-bead cellulose
 conjugates by an enzyme thermistor using immobilized
 invertase as the reporter catalyst
 9001-57-4
 11028-71-0
 screening of Con A-bead cellulose conjugates by an enzyme
 thermistor using immobilized invertase as the reporter

catalyst

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123:279991

Amperometric thin film biosensors based on glucose dehydrogenase and Toluidine Blue O as catalyst for NADH electrooxidation.

Boguslavsky, L. I.; Geng, L.; Kovalev, I. P.; Sahni, S. K.; Xu, Z.; Skotheim, T. A.; Laurinavicius, V.; Persson, B.; Gorton, L. (Moltech Corporation, Stony Brook, NY 11790-3350, USA). Biosens. Bioelectron., 10(8), 693-704 (English) 1995. CODEN: BBIOE4. ISSN: 0956-5663. DOCUMENT TYPE: Journal CA Section: 9 (Biochemical Methods) Section cross-reference(s): 72, 80

Amperometric glucose sensors were constructed based on solid graphite electrodes, surface-modified with NAD⁺-dependent glucose dehydrogenase (GDH), Toluidine Blue O (TBO), and protective ionic polymers. The electrocatalytic oxidn. of NADH was evaluated from cyclic voltammetry with TBO dissolved, adsorbed, and electrostatically or covalently bound to polymers. The NADH and glucose sensors constructed were investigated and operated at 0 mV vs. Ag/AgCl using single potential step chronoamperometry. The operational stability of the glucose sensors was limited by leakage of NAD⁺. A glucose sensitivity much higher than the carbon paste electrode was found. A sensitivity as high as 25 mA cm⁻² mM⁻¹ was achieved.

Keywords

glucose amperometric enzyme electrode NADH electrooxidn

Index Entries

Electron exchangers

Immobilization, biochemical

Oxidation, electrochemical

amperometric thin-film biosensors based on glucose dehydrogenase and Toluidine Blue O as catalyst for NADH electrooxidn.

Electrodes

bio-, enzyme, amperometric thin-film biosensors based on glucose dehydrogenase and Toluidine Blue O as catalyst for NADH electrooxidn.

50-99-7, analysis

58-68-4

37250-49-0

92-31-9

92-31-9, conjugates

100-20-9, Toluidine Blue O and polyethyleneimine conjugates

121-44-8, conjugates with polystyrene and toluidine blue O

9002-98-6, conjugates

76523-11-0, conjugate with toluidine blue O

169276-93-1, conjugate with toluidine blue O

169276-93-1

1403-66-3

7782-42-5, analysis

9002-98-6

9003-53-6, chloromethylated, conjugate with toluidine blue O and triethylamine

76523-11-0

amperometric thin-film biosensors based on glucose dehydrogenase and Toluidine Blue O as catalyst for NADH electrooxidn.

7440-44-0, analysis

glassy; amperometric thin-film biosensors based on glucose dehydrogenase and Toluidine Blue O as catalyst for NADH electrooxidn.

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120:75603

Mass transfer effects in solvent-free fat interesterification reactions: influences on catalyst design.

Ison, A. P.; Macrae, A. R.; Smith, C. G.; Bosley, J. (Adv. Cent. Biochem. Eng., Univ. Coll. London, London WC1E 7JE, UK).

Biotechnol. Bioeng., 43(2), 122-30 (English) 1994. CODEN: BIBIAU.

ISSN: 0006-3592. DOCUMENT TYPE: Journal CA Section: 16

(Fermentation and Bioindustrial Chemistry) Section cross-reference(s): 45

The use of solvent-free systems in the oil and fats industry is commonplace. Initial studies on interesterification were carried out in solvent systems because the lipase was immobilized solely by adsorption onto particles of diatomaceous earth. In this study, the mass transfer characteristics assocd. with the continuous interesterification of olive oil in a solvent-free system have been examd., for lipase immobilized on the three ion-exchange materials: Duolite ES562, Duolite ES568, and Spherosil DEA. The process of immobilization is influenced by the internal structure of the material and this in turn influences the interesterification activity of the catalyst. Individually prepd. catalysts for the three support materials have shown that external mass transfer limitations are unlikely even at low flowrates.

In the case of Spherosil DEA, with a mean pore diam. of 1480 Å, the wide pores would be expected to reduce internal mass transfer limitations; however, it is more likely that the redn. in activity with increased catalyst loading is due to the lipase mols. being immobilized in a tightly packed monolayer. In such a situation, some active sites of the lipase mols. would become inaccessible to substrate mols. leading to an obsd. redn. in activity. For Duolite ES568, the obsd. results are very similar to those seen for Spherosil DEA, however, the pore structure of this support material indicate that some internal mass transfer limitations may also be occurring. Yet the contribution on the individual effects cannot be detd. The results obsd. for the support Duolite ES562 are different than those obsd. for the other materials and reflect the heterogeneity of Duolite ES562. The large proportion of narrow pores in the support mean that, for the catalysts examd., immobilization is most likely to have occurred in the external pores of the particles, and as such no internal mass transfer limitation is obsd. It is clear that for interesterification the material chosen for enzyme immobilization will have an important role in detg. the catalyst efficiency. External mass transfer limitations are very minor and obsd. internal mass transfer limitations may be cause by both internal mass transfer and the manner in which the immobilization process occurs.

Keywords

lipase immobilization mass transfer interesterification
ion exchange support lipase immobilization interesterification

Index Entries

Mass transfer

in solvent-free fat interesterification reactions, lipase support effect on

Transesterification catalysts

lipase immobilized on ion-exchange support as, mass transfer effects in relation to

Immobilization, biochemical

of lipase, for solvent-free fat interesterification, mass transfer in relation to

9001-62-1

immobilized, as solvent-free fat interesterification catalyst, mass transfer effects on

77466-64-9

80748-31-8

143748-74-7

lipase immobilized on, as solvent-free fat interesterification catalyst, mass transfer effects on

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118:123152

Formed biocatalyst and its preparation.

Rathjen, Axel (Germany). Ger. Offen. DE 4125186 A1 4 Feb 1993, 7

pp. (Germany). CODEN: GWXXBX. CLASS: ICM: C12N011-08.

ICS: C12P039-00; B01J037-36; B01J035-04; C12M001-40.

APPLICATION: DE 91-4125186 30 Jul 1991. DOCUMENT TYPE:

Patent CA Section: 16 (Fermentation and Bioindustrial Chemistry)

A formed biocatalyst comprises microorganisms or enzymes incorporated in a polymer matrix in the form of a large block penetrated by multiple channels or bore holes through which the substrate-contg. medium circulates. This configuration is easily manufd. and handled, has high mech. strength, and allows short processing times for the biocatalytic reaction. Thus, a 3% aq. soln. of k-carrageenan was inoculated at 45° with a bacterial suspension and poured into a mold comprising a cylindrical tube closed at the ends with perforated caps, having solid rods passing through corresponding holes in the 2 caps. After the gel had cooled and set, the rods were removed to provide channels in the gel, and the perforated caps were replaced with distributing and collecting caps for passage of fermn. medium through the channels.

Keywords

biocatalyst polymer matrix channel

Index Entries

Gels

biocatalyst immobilization in channeled block of, in bioreactor

Polymers, biological studies

catalyst immobilization in channeled block of, in bioreactor

Bacteria

Microorganism

immobilized, in channeled polymer block in bioreactor

Pore

in polymer block contg. immobilized biocatalyst, in bioreactor

Immobilization, biochemical

of biocatalyst, in channeled polymer block in bioreactor

Extrusion of plastics and rubbers

Extrusion

Molding of plastics and rubbers

Molding

of channel-contg. block contg. immobilized biocatalyst, for

bioreactor

Lamination

of polymer contg. immobilized biocatalyst, channel formation in, for

bioreactor

Reactors

biocatalytic, biocatalyst immobilization in channeled polymer

block in

Enzymes

immobilized, in channeled polymer block in bioreactor

Molding of plastics and rubbers

Molding

injection, of channel-contg. block contg. immobilized biocatalyst, for

bioreactor

11114-20-8

biocatalyst immobilization in channeled block of, in bioreactor

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116:175644

Immobilization of flavin on highly porous polymeric disks: three routes to a catalytically active membrane.

Schoo, H. F. M.; Challa, G.; Rowatt, B.; Sherrington, D. C. (Lab. Polym. Chem., State Univ. Groningen, Groningen 9747 AG, Neth.). React.

Polym., 16(2), 125-36 (English) 1992. CODEN: REPLEN. ISSN:

0923-1137. DOCUMENT TYPE: Journal CA Section: 38 (Plastics

Fabrication and Uses) Section cross-reference(s): 37

Disks obtained by polymn. of high internal phase emulsions (Polyhipe)

had completely open pore structures and were used as a carrier

material for the immobilization of 10-ethylisoalloxazine (flavin). Three

methods for immobilization were described: (1) direct modification of

chloromethylated Polyhipe with flavin and Et₃N, (2) deposition of a

polyelectrolyte complex of flavin-contg. polycations and poly(Na

styrenesulfonate) onto the (internal) surface of a Polyhipe; and (3)

complexation of flavin-contg. polycations on the (internal) surface of a

sulfonated Polyhipe. The aerobic oxidn. catalytic activity per flavin

moiety in the continuous aerobic oxidn. of

1-benzyl-1,4-dihydronicotinamide depended on the method of

immobilization and on the loading with catalytic moieties, factors

influencing the accessibility, and distribution of catalytic sites over the

pore surface and the matrix of the Polyhipe. Optimum activity was

found in the case of method 3. All methods resulted in excellent

stability of the immobilized catalyst in continuous reactions. The linear

polycations immobilized by methods 2 and 3 could be decomplexed

completely after the continuous reaction, using a ternary solvent, and

analyzed by homogeneous spectroscopic techniques, providing a

powerful tool in the study of the fate of catalysts in continuous

processes.

Keywords

oxidn catalyst membrane flavin immobilization

porous polymeric disk flavin immobilization

Index Entries

Membranes

divinylbenzene-styrene copolymers, Polyhipes, porous disks, catalytically active, for immobilization of flavin

Oxidation catalysts

porous flavin-immobilized divinylbenzene-styrene copolymer disks, prepn. and activity of

55844-94-5

membranes, porous disks, catalytically active, for immobilization of flavin

121-44-8, reaction products with chloromethylated polystyrene and flavin

9003-70-7, sulfonated, reaction products with flavin-contg. polycation

32561-90-3, reaction products with chloromethylated polystyrene and triethylamine

55844-94-5, reaction products with flavin and triethylamine

prepn. and characterization of

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125:59162

Cationic catalyst immobilization.

Sangalov, Yu. A. (Inst. Neftekhim. Katal. 450075, Russia). Bashk.

Khim. Zh., 2(3-4), 6-16 (Russian) 1995. CODEN: BKZHFU. ISSN:

0869-8406. DOCUMENT TYPE: Journal; General Review CA Section:

35 (Chemistry of Synthetic High Polymers)

A review with 98 refs. on immobilization of cationic catalysts for polymn.

An effect of carrier nature on behavior of acid catalysts of various, i.e. including Brensted, Lewis and complex acids was analyzed. A special attention was paid to chem. aspects of immobilized cationic systems.

Keywords

review polymn cationic catalyst immobilized

Index Entries

Polymerization catalysts
cationic catalyst immobilization

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123:114407

Use of swelling hydrophobic polymeric gels for solving ecological problems.

Smetanyuk, V. I. (Inst. Neftekhim. Sint. im. Topchieva, Moscow, Russia). Neftekhimiya, 35(3), 256-62 (Russian) 1995. CODEN: NEFTAH. ISSN: 0028-2421. DOCUMENT TYPE: Journal CA Section:

38 (Plastics Fabrication and Uses)

The chem. stability of gel-immobilized catalytic systems is studied for Ni complexes with poly(2-methyl-5-vinylpyridine), poly(4-vinylpyridine), and their polymer complexes with poly(methacrylic acid), and a polyamide in the presence of org. Al compds. The use of polymer-immobilized Ni catalysts for propylene dimerization is considered. The use of swelling hydrophobic gels for water purifn. from petrochems. and hydrocarbons (toluene) is also discussed.

Keywords

polymer gel immobilized dimerization catalyst propylene
water purifn toluene extn polymer gel

Index Entries

Dimerization catalysts
use of swelling hydrophobic polymeric gels for catalyst
immobilization and water purifn.
115-07-1, reactions
propylene dimerization on polymer-immobilized nickel catalysts
7440-02-0, complexes with poly(alkylvinylpyridine) optionally contg.
poly(methacrylic acid)
25038-86-2, nickel complexes optionally contg. poly(methacrylic acid)
25087-26-7, complexes with poly(alkylvinylpyridine) and nickel
25232-41-1, nickel complexes optionally contg. poly(methacrylic acid)
108-88-3, preparation
use of swelling hydrophobic polymeric gels for catalyst
immobilization and water purifn.

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123:51050

Reaction rates in organic media show similar dependence on water activity with lipase catalyst immobilized on different supports. Oladepo, Dauda K.; Halling, Peter J.; Larsen, Vidar F. (Department of Bioscience & Biotechnology, University of Strathclyde, Glasgow G1 1XW, UK). Biocatalysis, 8(4), 283-7 (English) 1994. CODEN: BIOCED. ISSN: 0886-4454. DOCUMENT TYPE: Journal CA Section: 7 (Enzymes)

Lipase (E.C. 3.1.1.3) from Rhizomucor miehei was adsorbed on silica, zirconia and 5 alumina support materials. The immobilized prepns.

were used to catalyze esterification reactions of decanoic acid and dodecanol in hexane. The immobilized lipase and the org. phase were sep. preequilibrated to the desired water activities. The various support materials adsorbed widely different amts. of water at a given water activity. The reaction rates with all the support materials show similar dependence on water activity when the rates were normalized with the optimal rate for that support material. Hence water activity predicts the optimal conditions much better than water content.

Keywords

lipase immobilization water activity

Index Entries

Immobilization, biochemical

Rhizomucor miehei

Water of hydration

similar dependence of reaction rates in org. media on water activity with lipase catalyst immobilized on different supports

9001-62-1

1314-23-4, uses

1344-28-1, uses

7631-86-9, uses

similar dependence of reaction rates in org. media on water activity with lipase catalyst immobilized on different supports

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121:103036

Blueprint for a lipase support: use of hydrophobic controlled-pore glasses as model systems.

Bosley, John A.; Clayton, John C. (Unilever Res., Colworth Lab., Bedford MK44 1LQ, UK). Biotechnol. Bioeng., 43(10), 934-8 (English) 1994. CODEN: BIBIAU. ISSN: 0006-3592. DOCUMENT TYPE:

Journal CA Section: 7 (Enzymes)

For the com. exploitation of lipase biocatalysis to be successful, it is essential that effective supports are selected for lipase immobilization. In this study hydrophobic controlled-pore glasses have been used as model systems for the immobilization of Rhizomucor miehei lipase. The effect of pore diam. and surface chem. on enzyme efficiency in a typical esterification reaction under essentially nonaq. conditions has been examd. It has been found that pore diams. of at least 35 nm are needed for the lipase to be able to utilize the internal vol. of the support particles in the immobilization process. Despite the small size of the substrates in the esterification reaction, even larger pores (>100 nm) are required for the lipase efficiency to become independent of pore diam.; below 100 nm lipase activity and efficiency are markedly reduced. It has also been shown that the chem. nature of the hydrophobic surface plays an important part in catalyst design. Although lipase will adsorb readily to a wide range of hydrophobic groups, the highest catalyst activities are obtained when the glass surface is derivatized to give long alkyl chains; the presence of unsatd. derivs. generally leads to a redn. in activity.

Keywords

lipase immobilization glass nonaq catalyst

Index Entries

Glycerides, reactions

hydrolysis of, by lipase immobilized on controlled-pore glass, support pore size effect on

Hydrophobicity

of controlled-pore glass, lipase immobilization properties in relation to
Immobilization, biochemical
of lipase on hydrophobic controlled-pore glasses
Fatty acids, preparation
esters, prepn. of, with lipase immobilized on controlled-pore glass, support pore size effect on
Glass, oxide
porous, lipase immobilized on, lipid hydrolysis and fatty acid esterification activity of, support pore size and hydrophobicity effect on
75-77-4, derivs.
75-78-5, derivs.
144-79-6, derivs.
768-33-2, derivs.
4028-23-3, derivs.
18156-15-5, derivs.
18162-48-6, derivs.
18162-84-0, derivs.
18643-08-8, derivs.
controlled-pore glass derivatized with, for lipase immobilization, surface chem. properties in relation to
9001-62-1, immobilized
glyceride hydrolysis and fatty acid esterification activity of, support pore size effect on

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121:43907

Immobilization of alkoxyated phosphine ligands and their Rh complexes to a silica surface coated with an organic mono- or multilayer.

Hong, Liang; Ruckenstein, Eli (Department of Chemical Engineering, State University of New York at Buffalo, Buffalo, NY 14260, USA). J. Mol. Catal., 90(3), 303-22 (English) 1994. CODEN: JMCADS. ISSN: 0304-5102. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 29, 45, 66, 78

A new methodol. for the immobilization of homogeneous catalysts on a modified silica surface is suggested. Phosphine ligands with polar substituted groups as well as their rhodium carbonyl complexes are attached to modified silica substrates. The modified silica substrates were prepd. by either depositing a crosslinked poly(hydroxyethyl methacrylate) network on the surface of porous silica, or by transforming the surface-pendant hydroxyl groups of silica into [3-(siloxysilyl)propyl]-ethylenediamine groups. They are denoted as P(HEMA-MBAM)/SiO₂ and SSPEDA/SiO₂, resp. The following phosphine ligands were attached to the modified silica: (1) a,w-bis(diphenylphosphino)-poly(ethylene glycol) (DPP-PEG); (2) 2-methoxy-methylenepheryl-diphenylphosphine (MPDPP); and (3) 1,2-bis{[(2-methoxyacetylphenyl)-phenyl-(diphenyl)]phosphino}ethane (MAPDPPE). The FT-IR investigations of these immobilized catalysts revealed hydrogen bonding between the surface-pendant hydroxyl or amino groups and the oxygen atoms of the phosphine ligands. The SEM and EDS surface analyses showed that the phosphine rhodium carbonyl complexes were uniformly distributed over the polymer coated silica. Hydroformylation reactions of several olefins were employed for the assessment of the efficiency of immobilization, and both hydrophobic (cyclohexane) and hydrophilic (water) reaction media have been employed. The time dependence of the hydroformylation of 2-(±)-ethylhexyl acrylate (EHA) in a hydrophobic medium indicated that the modified silica surfaces are more compatible with the hydrophobic reactant mols. than the pure silica surface, and that SSPEDA/SiO₂ is more effective than P(HEMA-MBAM)/SiO₂. The much higher hydroformylation rate for sodium 10-undecenoate (UDNa) than for

1-vinylimidazole when water was used as reaction medium is due to the higher ability of the former surface active mols. to be adsorbed on the catalyst surface. Successive reuses of the immobilized catalysts in the hydroformylation of Et 10-undecenoate in cyclohexane have demonstrated that MAPDPPE provides stronger immobilization than MPDPP.

Keywords

alkoxylated phosphine rhodium immobilization silica catalyst
hydroformylation catalyst alkoxylated phosphine rhodium silica

Index Entries

Catalysts and Catalysis

Hydroformylation catalysts

alkoxylated phosphine ligands and their rhodium complexes
immobilized on silica

Kinetics of hydroformylation

catalyzed by alkoxylated phosphine ligands and their rhodium
complexes immobilized on silica

7631-86-9, uses

catalysts from alkoxylated phosphine ligands and their rhodium
complexes immobilized on

692-86-4

1072-63-5

3398-33-2

126830-02-2

hydroformylation of, catalysts from alkoxylated phosphine ligands
and their rhodium complexes immobilized on silica for

1760-24-3

10049-07-7

13175-76-3

25249-16-5

151835-87-9

156217-05-9

in catalyst prepn. with alkoxylated phosphine ligands and their
rhodium complexes immobilized on silica

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120:264555

Screening of concanavalin A-bead cellulose conjugates using an
enzyme thermistor with immobilized invertase as the reporter
catalyst.

Docolomansky, Peter; gemeiner, Peter; Mislovicova, Danica; Stefuca,
Vladimir; Danielsson, Bengt (Inst. Mol. Physiol. Genet., Slovak Acad.
Sci., Bratislava 833 34, Slovakia). Biotechnol. Bioeng., 43(4), 286-92
(English) 1994. CODEN: BIBIAU. ISSN: 0006-3592. DOCUMENT

TYPE: Journal CA Section: 7 (Enzymes) Section cross-reference(s): 9

Screening and design of immobilized biocatalysts (IMBs) is a
time-consuming process. An ideal process should be universal, fast,
convenient, precise and reproducible. Many of these requirements are
met by enzymic thermistors (ETs) or thermal assay probes (TAPs).
Adaptation of ETs to real measurements of reaction rates requires
coupling of the math. description of the reaction-diffusion phenomena in
the ET column with heat balance and, subsequently, exptl. verification of
the math. model. This article presents a such a success developed as
an adaptation of ETs for the characterization of the microkinetic
properties of the IMBs and their further application for screening of
IMBs. The IMBs characterized were the prepn. of invertase,
biospecifically adsorbed on Con A conjugated to activated bead
cellulose.

Keywords

invertase immobilization enzyme thermistor cellulose concanavalin

Index Entries

Michaelis constant

of invertase immobilized form

Simulation and Modeling, physicochemical

of invertase reaction in mini-packed bed reactor of enzyme thermistor

Adsorption

Immobilization, biochemical

of invertase, on Con A-bead cellulose conjugates, for enzyme thermistors

Kinetics, enzymic

of substrate inhibition, of invertase immobilized form, by sucrose

Biosensors

enzymic, thermistor-based, with invertase immobilized on Con A-bead cellulose conjugates

9001-57-4

immobilization of, on Con A-bead cellulose conjugates, for enzyme thermistors

9004-34-6, conjugates with Con A

11028-71-0, conjugates with cellulose

invertase adsorption and immobilization onto, for enzyme thermistors

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120:254632

Catalyst of immobilized rhodium cluster complex, and its manufacture.

Okazaki, Takumi; Shito, Takafumi; Ichikawa, Masaru (Arakawa Chem

Ind, Japan). Jpn. Kokai Tokkyo Koho JP 05237393 A2 17 Sep 1993

Heisei, 5 pp. (Japan). CODEN: JKXXAF. CLASS: ICM: B01J031-20.

ICA: C07B061-00; C07C047-02. APPLICATION: JP 92-36254 24

Feb 1992. DOCUMENT TYPE: Patent CA Section: 67 (Catalysis,

Reaction Kinetics, and Inorganic Reaction Mechanisms)

The title catalyst comprises a Rh cluster chem. immobilized at the phosphine position of a SiO₂ support modified with a phosphine via an ether bonding. Specifically, the Rh cluster and phosphine may comprise Rh₄(CO)₁₂ and tris(hydroxymethyl)phosphine. A method for manufg. the catalyst is also described.

Keywords

rhodium cluster catalyst silica immobilization

Index Entries

Catalysts and Catalysis

Exchange reaction catalysts

Hydrogenation catalysts

Water gas shift reaction catalysts

rhodium cluster complexes

Cluster compounds, coordinative

rhodium, immobilized, for catalysts

7631-86-9, uses

catalysts from rhodium clusters immobilized on

19584-30-6

catalysts prepd. from

107-02-8, reactions

hydrogenation of, manuf. of catalysts for

2767-80-8

in prepn. of catalysts with immobilized rhodium clusters

1333-74-0, reactions

7782-39-0, reactions
isotope exchange of, manuf. of catalyst for
123-38-6, preparation
prepn. of, manuf. of catalyst for

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120:135833

Preparation of functionalized polyorganosiloxane spheres for the immobilization of catalytically active compounds.
Yacoub-George, E.; Bratz, E.; Tiltscher, H. (Lehrstuhl II fuer Technische Chemie der TU Muenchen, Lichtenbergstr. 4, 85747, Garching, Germany). J. Non-Cryst. Solids, 167(1-2), 9-15 (English) 1994.
CODEN: JNCSBJ. ISSN: 0022-3093. DOCUMENT TYPE: Journal
CA Section: 37 (Plastics Manufacture and Processing) Section
cross-reference(s): 35, 45

A procedure for the prepn. of functionalized polyorganosiloxane spheres is presented. The macroporous beads are suitable supports for covalent immobilization of catalytically active compds. They are generated by co-condensation of tetraalkoxysilane-organoalkoxysilane droplets in water. A specially designed 2-phase reactor permits continuous prepn. To achieve a satisfactory condensation rate, an organotin compd. is added. Variation of the reaction conditions allows control of the size (0.2-1.5 mm in diam.), the sp. surface area (10-400 m²/g) and the pore vol. (0.1-0.7 mL/g) of the spheres.

Keywords

siloxane sphere synthesis catalyst immobilization

Index Entries

Catalysts and Catalysis
prepn. of functionalized mech. stable siloxane spheres for immobilization of
Siloxanes and Silicones, preparation
prepn. of functionalized mech. stable spheres of, for immobilization of catalysts

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119:210781

Manufacture of immunologically active medical goods and implants.
Ozaki, Yasuhiko; Okada, Nobuko (Unitika Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 05084294 A2 6 Apr 1993 Heisei, 8 pp. (Japan).
CODEN: JKXXAF. CLASS: ICM: A61L033-00. ICS: A61L029-00.
APPLICATION: JP 91-274830 25 Sep 1991. DOCUMENT TYPE:
Patent CA Section: 63 (Pharmaceuticals)
Catalysts against active O, such as chelating agents and myeloperoxidase are immobilized on the surface of medical goods to prevent the occurrence of inflammation in the body. For example, myeloperoxidase was immobilized on the surface of an Al piece, which may be used in manufg. medical goods.

Keywords

medical goods catalyst immobilization inflammation

Index Entries

Inflammation inhibitors
EDTA and myeloperoxidase as, on surface of medical goods
Medical goods
implants, surface treatment of, with catalysts
Prosthetic materials and Prosthetics

implants, surface treatment of, with catalyst
 9003-99-0
 60-00-4, properties
 immobilization of, on surface of medical goods for inflammation
 prevention
 7429-90-5, biological studies
 myeloperoxidase and EDTA immobilization on surface of,
 medical goods manuf. with

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119:158350

Preparation of immobilized lipases and their use in the synthesis of
 glycerides.

Ergan, Francoise; Trani, Michael; Andre, Gerald (National Research
 Council of Canada, Can.). Can. CA 1318624 A1 1 Jun 1993, 43 pp.

(Canada). CODEN: CAXXA4. CLASS: ICM: C12N011-02. ICS:

C12N009-16; C12P007-00. APPLICATION: CA 89-611641 15 Sep

1989. DOCUMENT TYPE: Patent CA Section: 16 (Fermentation and

Bioindustrial Chemistry) Section cross-reference(s): 7

A dry porous matrix for the synthesis of glycerides from fatty acids and
 glycerol comprises lipase 0.4-10.2, inert protein 69.9-86.6, and a
 crosslinking agent 11.7-23% by wt. Lipase of *Rhizopus arrhizus* was
 mixed with bovine albumin and glutaraldehyde in phosphate buffer. The
 mixt. was allowed to stand at room temp. for 10 min. for crosslinking to
 occur between the lipase and the albumin. The resulting mixt. was
 stored frozen at -80°. Prior to use, the mixt. was thawed at 4° in distd.
 water, rinsed with acetone, and dried on filter paper at room temp. for
 12 h. Oleic acid 0.5 and glycerol 0.05 g were brought in contact with
 the support thus prepd. The reaction mixt. was agitated at 34° to form
 mono-, di-, and triolein.

Keywords

glyceride manuf lipase immobilization

Index Entries

Albumins, reactions

lipase crosslinked with bovine, as catalytic matrix for glyceride
 manuf.

Candida rugosa

Rhizomucor miehei

Rhizopus arrhizus

Rhizopus delemar

lipase of, immobilization of, for glyceride manuf. from glycerol and
 fatty acid

Glycerides, preparation

manuf. of, crosslinked albumin-lipase as catalytic matrix for

Immobilization, biochemical

of lipase on albumin by crosslinking, as catalytic matrix for
 glyceride manuf.

9001-62-1

immobilization of, for glyceride manuf. from glycerol and fatty acid

111-62-6

prepn. of, from oleic acid and ethanol, immobilized lipase for

122-32-7

25496-72-4

25637-84-7

prepn. of, from oleic acid and glycerol, immobilized lipase for

112-62-9

prepn. of, from oleic acid and methanol, immobilized lipase for

112-80-1, reactions

reaction of, with glycerol in olein prepn., immobilized lipase as
 catalyst for

64-17-5, reactions

reaction of, with oleic acid in Et oleate prepn., immobilized lipase for

67-56-1, reactions

reaction of, with oleic acid in Me oleate prepn., immobilized lipase for

56-81-5, reactions

reaction of, with oleic acid in olein prepn., immobilized lipase for

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117:234482

Immobilization of aminoacylase from *Aspergillus oryzae* on chloromethylated cross-linked polystyrenes.

Wang, Daobin; Jiang, Ping; He, Binglin (Inst. Polym. Chem., Nankai Univ., Tianjin 300071, Peop. Rep. China). *Chin. Chem. Lett.*, 3(7), 525-8 (English) 1992. CODEN: CCLEE7. DOCUMENT TYPE:

Journal CA Section: 34 (Amino Acids, Peptides, and Proteins) Section cross-reference(s): 7, 9

A no. of chloromethylated crosslinked polystyrene resins were prepd. and used to immobilize aminoacylase from *Aspergillus oryzae*. A study of factors affecting the activity of the immobilized enzyme indicated that a resin with large pore size possessed high enzymic activity and high stability in the resoln. of racemic N-acetyl amino acids.

Keywords

resoln acetyl amino acid immobilized aminoacylase
polymer bound aminoacylase resoln catalyst

Index Entries

Aspergillus oryzae

aminoacylase from, immobilized on crosslinked chloromethylated polystyrene, catalyst, for resoln. of acetyl amino acids

Polymer-supported reagents

aminoacylase on chloromethylated polystyrene resins, for resoln. of racemic acetyl amino acids

Amino acids, preparation

prepn. of, by resoln. with aminoacylase immobilized on chloromethylated polystyrene resins.

Resolution

enzymic, of racemic acetyl amino acids with aminoacylase immobilized on chloromethylated polystyrene resins

9003-53-6, crosslinked, chloromethylated, reaction products with aminoacylase

catalyst, for resoln. of acetyl amino acids

9012-37-7

from *Aspergillus oryzae*, immobilized on crosslinked chloromethylated polystyrene, catalyst, for resoln. of acetyl amino acids

63-68-3, preparation

63-91-2, preparation

348-67-4

673-06-3

prepn. of, by resoln. with aminoacylase immobilized on chloromethylated polystyrene resins

1115-47-5

resoln. of, with aminoacylase immobilized on chloromethylated polystyrene resins

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117:132016

Ferric chloride immobilized on crosslinked poly(4-vinylpyridine)

carriers. Effect of morphology and accessibility of active centers on catalytic activity.

Stamenova, R.; Ivanova, P.; Pelzbauer, S.; Tsvetanov, Kh. (Inst. Macromol. Chem., Prague, Czech.). Vysokomol. Soedin., Ser. B, 34(2), 71-8 (Russian) 1992. CODEN: VYSBAI. ISSN: 0507-5483.

DOCUMENT TYPE: Journal CA Section: 37 (Plastics Manufacture and Processing) Section cross-reference(s): 38, 45

Catalytic activity of Fe- and Cr-polymer-immobilized catalysts in esterification of methacrylic acid with ethylene oxide depended on the structure and morphol. of poly(4-vinylpyridine) (I)-based carries. Copolymer of poly(ethylene oxide) and I crosslinked with N,N'-methylenebis(acrylamide) showed higher sorption ability than divinylbenzene-crosslinked I and 99-100% selectivity. Sorption ability and catalytic activity of polymer-immobilized Fe complexes were detd. by the microenvironment of the reactive centers.

Keywords

polyvinylpyridine ferric chloride complex catalyst
hydroxyethylation catalyst methacrylic acid
ethylene oxide methacrylic acid esterification
immobilization ferric chloride catalyst polyvinylpyridine

Index Entries

Polymer-supported reagents
catalysts, iron, for esterification of methacrylic acid with ethylene oxide
Hydroxyethylation catalysts
iron, polymer-supported, for methacrylic acid with ethylene oxide
Polymer morphology
of vinylpyridine-based polymeric catalyst supports, iron activity and sorption in relation to
7439-89-6, uses
7440-47-3, uses
catalysts, polymer-supported, for hydroxyethylation of methacrylic acid
75-21-8, reactions
esterification of methacrylic acid with, polymer-supported iron catalysts for
79-41-4, reactions
esterification of, with ethylene oxide, polymer-supported iron catalysts for
9017-40-7
143502-93-6
143502-94-7
supports, for iron catalysts for hydroxyethylation of methacrylic acid

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116:173993

Oxidation of low hydrocarbons on immobilized cell catalysts.
Li, Shuben; Gao, Canzhu (Lanzhou Institute of Chemical Physics, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1055201 A 9 Oct 1991, 8 pp. (People's Republic of China). CODEN: CNXXEV. CLASS: ICM: C12P017-02. ICS: C12P001-00.

APPLICATION: CN 90-104573 7 Jul 1990. DOCUMENT TYPE:

Patent CA Section: 27 (Heterocyclic Compounds (One Hetero Atom))
Section cross-reference(s): 16

Lower hydrocarbons are oxidized by immobilized cells which are manufd. by entrapment in Na alginate. Methylomonas 761 were cultured in 1:1 air-CH₄ at 30° and introduced into a 2.7% Na alginate soln. and manufd. into immobilized catalyst beads, over which was passed an 1:1 mixt. of air and propylene at 40° to give 1.6 mmol propylene oxide after 6 h. The immobilized cell catalysts were

regenerated by 1:1 air-CH₄ at 32° for 16 h to show undiminished catalytic activity.

Keywords

immobilized Methylomonas catalyst propylene epoxidn
methyloxirane prepn catalyst immobilized Methylomonas

Index Entries

Epoxidation catalysts
immobilized Methylomonas, for propylene
Methylomonas
immobilized, catalysts, for epoxidn. of propylene
Immobilization, biochemical
of Methylomonas, for epoxidn. of propylene
115-07-1, reactions
epoxidn. of, immobilized Methylomonas catalyst for
75-56-9, preparation
prepn. of, by epoxidn. of propylene, immobilized Methylomonas
catalyst for
74-82-8, uses
regeneration by, of immobilized Methylomonas catalysts

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116:130644

Immobilization of lipase on poly(vinyl alcohol)/polyethyleneimine copolymer and synthesis of esters catalyzed by lipase.
Ikeda, Isao; Sato, Issei; Suzuki, Kimihiro (Eng. Coll., Fukui Univ., Fukui, Japan). Sen'i Kogyo Kenkyu Kyokai Hokoku, 1, 22-9 (Japanese)
1991. CODEN: SKKIE8. DOCUMENT TYPE: Journal CA Section: 38
(Plastics Fabrication and Uses) Section cross-reference(s): 16
Bromoacetalized poly(vinyl alc.) is coupled with poly(ethylenimine), and the resulting graft copolymer is then crosslinked with glutaraldehyde; lipase OF is immobilized on the crosslinked copolymer. The activity of the immobilized lipase is 1000 units/g irresp. of the poly(ethylenimine) mol. wt. The prepn. of glycerides from oleic acid and glycerol using the polymer-bound lipase is examd. The degree of synthesis of glyceride increases with increasing glycerol concn. Esters of ethylene glycol and 1,3-butanediol are also prepd.

Keywords

polyvinyl alc lipase catalyst support
polyethyleneimine copolymer lipase catalyst support
esterification catalyst polymeric supported lipase
vinyl alc ethyleneimine graft copolymer

Index Entries

Esterification catalysts
ethyleneimine-vinyl alc. graft copolymer-supported lipase OF,
prepn. and use of
Polymer-supported reagents
lipase OF, on ethyleneimine-vinyl alc. graft copolymers, for
esterification
Immobilization, biochemical
of lipase OF on ethyleneimine-vinyl alc. graft copolymers, for
esterification
112-80-1, reactions
esterification of, with glycerol, ethyleneimine-vinyl alc. graft
copolymer-supported lipase OF catalysts for
56-81-5, reactions
107-21-1, reactions

107-88-0

esterification of, with oleic acid, ethyleneimine-vinyl alc. graft
copolymer-supported lipase OF catalysts for
111-30-8, reaction products with lipase OF and ethyleneimine-vinyl alc.
graft copolymers
9001-62-1, reaction products with glutaraldehyde and
ethyleneimine-vinyl alc. graft copolymers
108166-37-6, reaction products with glutaraldehyde and lipase OF
prepn. and use of, as esterification catalysts
37220-82-9
prepn. of, ethyleneimine-vinyl alc. graft copolymer-supported lipase
OF catalysts for

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123:78137

Characterization of a novel thermostable esterase as an industrial
catalyst.

Wood, A. N. P.; Fernandez-Lafuente, R.; Cowan, D. A. (Department
Biochem. Mol. Biol., Univ. College London, London WC1E 6BT, UK).
Biotechnol. Appl. Biochem., 21(3), 313-22 (English) 1995. CODEN:
BABIEC. ISSN: 0885-4513. DOCUMENT TYPE: Journal CA Section:

7 (Enzymes) Section cross-reference(s): 16, 21

A thermostable esterase from a strain of *Bacillus stearothermophilus*
(Tok19A) has been characterized with respect to some of the functional
properties relevant to its use in biotransformations. This enzyme
showed high activity and stability in the presence of moderate concns.
of C1-C6 alcs., but was less stable when miscible org. solvent concn.
was greater than 50% (vol./vol.). In slowly stirred biphasic solvent
systems, esterase activity was fully retained after a 24 h incubation
period. The esterase was rapidly immobilized on glyoxylagarose gels
with little loss of activity. Broad specificity with respect to acyl and alc.
moieties of ester substrates was obsd. Esterolytic activity at moderate
temps. (e.g. 20-30°) was high with structurally diverse ester substrates
including aliph., cyclic and sugar esters. These results suggest that the
B. stearothermophilus Tok19A1 esterase possesses a no. of functional
properties suited to its application as an industrial catalyst.

Keywords

Bacillus esterase stability catalysis

Index Entries

Bacillus stearothermophilus
Immobilization, biochemical
Solvent effect
Esters, biological studies
Albumins, biological studies
characterization of a novel thermostable esterase as industrial
catalyst
9013-79-0
56-81-5, biological studies
64-17-5, biological studies
67-56-1, biological studies
67-63-0, biological studies
67-64-1, biological studies
68-12-2, biological studies
107-21-1, biological studies
109-86-4
141-78-6, biological studies
504-63-2
35296-72-1
62309-51-7
105054-62-4

characterization of a novel thermostable esterase as industrial catalyst

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122:301239

Surface copper immobilization by chelation of alizarin complexone and electrodeposition on graphite electrodes, and related hydrogen sulfide electrochemistry; matrix isolation of atomic copper and molecular copper sulfides on a graphite electrode.

Zhang, JiuJun; Lever, A. B. P.; Pietro, William J. (Department of Chemistry, York University, North York, Ontario M3J 1P3, Can.). J. Electroanal. Chem., 385(2), 191-200 (English) 1995. CODEN:

JECHES. ISSN: 0368-1874. DOCUMENT TYPE: Journal CA Section:

72 (Electrochemistry) Section cross-reference(s): 66, 67

The irreversibly adsorbed alizarin complexone (H3AC) was employed to immobilize and maintain CuII ions on the graphite electrode. The coordination chem. between the adsorbed alizarin complexone ligand and the CuII ion on the surface was examd. by surface cyclic voltammetry. Upon redn. of the CuII center to a Cu0 atom, a submonolayer of individual atoms of Cu0 rather than a continuous layer is formed on the electrode surface. The immobilized surface displays electrocatalytic activity towards the oxidn. of sulfide ion from [S2-] ion to S0. The electrocatalytic activity for the sulfide oxidn. on a [CuII(AC)(H2O)2]- adsorbed electrode is essentially identical with that of a electrode that contains an electrodeposited submonolayer of Cu0. The active catalyst in both cases is identified to be a submonolayer of cupric sulfide. The electrochem. of the Cu0 submonolayer-coated electrode in aq. soln. contg. hydrogen sulfide was also examd. When the modified electrode was polarized from -1.1 V to 0.2 V, three electrode processes were obsd. The 1st, near -0.7 V, is a surface reaction between surface Cu0 and adsorbed [S2-] ion to form a submonolayer of cuprous sulfide. The 2nd appeared near -0.23 V and is another surface process between Cu2S and adsorbed sulfide ion to form a submonolayer of cupric sulfide. The 3rd reaction is the electrochem. oxidn. of sulfide ion catalyzed by CuS to form sulfur which deposits on the electrode surface when the potential is pos. of -0.2 V

Keywords

copper immobilization chelation alizarin complexone electrode
sulfide electrooxidn immobilized copper alizarin complexone
cupric sulfide catalyst electrochem oxidn

Index Entries

Adsorbed substances

copper alizarin complexone complexes on graphite electrode for electrocatalyst for sulfide oxidn.

Electrodeposits and Electroplates

electrochem. of electrodeposited submonolayer of copper in presence of hydrogen sulfide

Oxidation catalysts

electrochem., cupric sulfide and copper-alizarin complexone complex adsorbed on graphite electrode for sulfide oxidn.

7782-42-5, uses

copper-alizarin complexone complex adsorbed on graphite electrode for sulfide electrocatalytic oxidn.

3952-78-1, copper complexes

7440-50-8, alizarin complexone complexes

163318-65-8

electrocatalytic activity for sulfide oxidn. on graphite electrode with adsorbed

7783-06-4, properties

electrocatalytic activity of copper-alizarin complexone complex

adsorbed on graphite electrode for oxidn. of
1317-40-4
formation and catalyst for sulfide electrooxidn.
18496-25-8
oxidn. on :cupric sulfide and copper-alizarin complexone complex
adsorbed on graphite electrode

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121:118561

Evolution to a temperature of a precursor of a NiMoO₄ preparation by immobilization of Ni⁺⁺aq and MoO₄⁻⁻aq in an organic matrix.
Anouchinsky, R.; Kaddouri, A.; Mazzocchia, C. (Dipartimento di Chimica Industriale e di Ingegneria Chimica "G. Natta", Politecnico di Milano, Milan 20133, Italy). Calorim. Anal. Therm., 24, 301-4 (Italian) 1993. CODEN: CAATDG. ISSN: 1154-3132. DOCUMENT TYPE: Journal CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section cross-reference(s): 66
A novel prepn. methodol. of a NiMoO₄ catalyst is described, consisting in the immobilization of Ni and Mo ions from an aq. soln. of inorg. salts after gelification with agar-agar. If compared with other precursors prepd. by copptn., heating the gel the crystn. takes place at very low temp., together with the collapse of the gel structure and the elimination of the water which represents more than 80% of the wt. of the gel. The phase compn. changes depending on the thermal treatment: a fast heating promotes the crystn. of the b phase while a step-by-step procedure allows an increasing formation of the a phase.

Keywords

nickel molybdate catalyst formation

Index Entries

Catalysts and Catalysis

nickel molybdate, formation of, from aq. nickel(II) and molybdate ions immobilized in org. matrix
14177-55-0
formation of, from aq. nickel(II) and molybdate ions immobilized in org. matrix
7440-02-0, reactions
nickel molybdate catalyst formation from org. matrix-immobilized aq. divalent ions of
14259-85-9
14701-22-5, reactions
nickel molybdate catalyst formation from org. matrix-immobilized aq. ions of

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120:8445

Immobilization of substrates in enzyme-catalyzed hydrolysis.
King, Chi Hsin R.; Margolin, Alexey L. (Marion Merrell Dow Res. Inst., Cincinnati, OH 45215, USA). Tetrahedron: Asymmetry, 4(5), 943-6 (English) 1993. CODEN: TASYE3. ISSN: 0957-4166. DOCUMENT TYPE: Journal CA Section: 27 (Heterocyclic Compounds (One Hetero Atom)) Section cross-reference(s): 9
A new technique - immobilization of substrates on solid supports - was applied to the synthesis of a new potent optically pure serotonin receptor antagonist. Thus, the serotonin receptor antagonist MDL 100907 was prepd. in 36% yield (96% ee) by hydrolysis of its butyrate ester adsorbed on silica in the presence of lipase from Candida rugosa.

Keywords

enzyme catalyzed hydrolysis immobilized substrate
lipase hydrolysis catalyst immobilized substrate
serotonin receptor antagonist stereoselective prepn

Index Entries

Asymmetric synthesis and induction
by immobilization of substrates in enzyme-catalyzed hydrolysis
Hydrolysis
of ester immobilized on solid support, enzyme-catalyzed
Kieselguhr
support, for enzyme-catalyzed hydrolysis of ester
9001-62-1
catalyst, for hydrolysis of ester immobilized on solid support
151292-50-1
enzyme-catalyzed hydrolysis of, immobilized on inorg. supports
139290-65-6
stereoselective prepn. of, by enzyme-catalyzed hydrolysis of
immobilized ester
78005-98-8
123009-91-6
1344-28-1, uses
7631-86-9, uses
support, for enzyme-catalyzed hydrolysis of ester

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119:95499
Silica-supported polysiloxanes with dithiacrown ether groups and their
platinum complexes.
Chen, Yuanyin; Lu, Xueran; Song, Xiaoping (Dep. Chem., Wuhan Univ.,
Wuhan 430072, Peop. Rep. China). Chem. Res. Chin. Univ., 8(4),
439-44 (English) 1992. CODEN: CRCUED. DOCUMENT TYPE:
Journal CA Section: 28 (Heterocyclic Compounds (More Than One
Hetero Atom)) Section cross-reference(s): 23, 29

The syntheses of silica-supported
polypropyloxymethyldithia-15-crown-5 and -18-crown-6 compds. I (n =
0, 1; R = Si from silica) and their platinum complexes are presented. I
were prepd. by sequential tosylation and cyclocondensation of
H₂C:CHCH₂CH(OH)CH₂OCH₂(CH₂OCH₂)_nCH₂OH with
HOCH₂(CH₂SCH₂)₂CH₂OH to give the allyloxymethyl crown compds. II.
Hydrosilylation of II with HSi(OEt)₃ and then treatment with silica gave I.
The platinum complexes of I are effective catalysts for the
hydrosilylation of olefins with triethoxysilane. The influences of temp.,
amt. of platinum complex used, and the nature of olefin used on the
catalytic activity of the complexes were also investigated.

Keywords

silica supported polysiloxane dithiacrown
platinum polysiloxane dithiacrown complex prepn catalyst
hydrosilylation catalyst platinum polysiloxane dithiacrown complex
olefin catalytic hydrosilylation

Index Entries

Alkenes, reactions
hydrosilylation of, with triethoxysilane in presence of silica-bound
polysiloxane dithiacrown-platinum complexes
Hydrosilylation
of alkenes with triethoxysilane, catalytic
Hydrosilylation catalysts
silica-bound polysiloxane dithiacrown-platinum complexes, for

alkenes with triethoxysilane
 40253-97-2, silica-bound platinum complex
 52559-80-5, silica-bound platinum complex
 catalyst, for hydrosilylation of alkenes, prepn. of
 7440-06-4, silica-bound polysiloxane dithiacrown complexes
 catalysts, for hydrosilylation of alkenes, prepn. of
 5244-34-8
 cyclocondensation of, with allyloxymethyldi- and
 allyloxymethyltriethylene glycol ditosylate
 998-30-1
 hydrosilylation by, of allyloxymethyldithiacrown compds.
 872-05-9
 hydrosilylation of, with triethoxysilane in presence of silica-bound
 polysiloxane dithiacrown-platinum complex
 106-92-3
 112-41-4
 300-57-2
 hydrosilylation of, with triethoxysilane in presence of silica-bound
 polysiloxane dithiacrown-platinum complexes
 124028-99-5
 124213-39-4
 prepn. and cyclocondensation of, with dithiaoctanediol
 149048-18-0
 149048-19-1
 prepn. and hydrosilylation of, with triethoxysilane
 149048-20-4
 149048-21-5
 prepn. and immobilization of, on silica
 149048-20-4, reaction products with silica
 149048-21-5, reaction products with silica
 prepn. and reaction of, with tetrachloroplatinate
 2943-73-9
 18536-91-9
 92992-68-2
 prepn. of
 33065-62-2
 114951-77-8
 tosylation of

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119:43797

Reaction technology of the enzyme catalyzed C-C bonding.

Kragl, U.; Bossov-Berke, B.; Danzig, J.; Dreisbach, C.; Wandrey, C.
 (Inst. Biotechnol., Juelich, Germany). DECHEMA Monogr., 129 (Wege
 ze Neuen Produkten und Verfahren der Biotechnologie), 223-33
 (German) 1993. CODEN: DMDGAG. ISSN: 0070-315X.

DOCUMENT TYPE: Journal; General Review CA Section: 7 (Enzymes)

Section cross-reference(s): 9, 21

A review with 18 refs. Continuous processes for enzyme catalyzed
 enantioselective C-C-bonding were developed using reaction
 engineering. Fructose-1,6-bisphosphate aldolase was stabilized by
 covalent attachment to a microcarrier. For the continuous process, a
 slurry-reactor was used. The absence of mass transfer limitation was
 proven for this system. (R)-oxynitrilase was used for the synthesis of
 (R)-mandelonitrile. The enzyme was used in sol. form in the aq.
 system, and immobilized in lyotropic liq. crystals. In continuous
 processes, a space-time yield up to 2.4 kg/(L*d) was obtained. For a
 chemoenzymic approach, a method for the continuous acid catalyzed
 racemization-free hydrolysis of (R)-mandelonitrile was developed. For
 the enantioselective addn. of diethylzinc to benzaldehyde to form
 (S)-1-phenyl-1-propanol, the required chiral catalyst was
 polymer-enlarged. This system may also be used in a continuously
 operating membrane reactor.

Keywords

enzyme enantioselective bioorg synthesis review
immobilized enzyme enantioselective bioorg synthesis review

Index Entries

Stereochemistry

of enzyme-catalyzed C-C bonding in bioorg. synthesis,
enantioselectivity in
Immobilization, biochemical
of enzymes for bioorg. synthesis

Reactors

biocatalytic, for bioorg. synthesis
10020-96-9
formation by oxynitrilase sol. and immobilized forms and
racemization-free hydrol. of
9024-43-5
mandelonitrile enantiomer formation by sol. and immobilized forms
of
9024-52-6, immobilized
prepn. and applications in enantioselective bioorg. synthesis
613-87-6
prepn. of, polymer-bound chiral catalyst in
557-20-0
reaction of, with benzaldehyde, polymer-bound chiral catalyst in
100-52-7, reactions
reaction of, with diEt zinc, polymer-bound chiral catalyst in

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118:6438

Crown ethers immobilized on a polymer support as a new
phase-transfer catalyst.
Kurmanaliev, M.; Ergozhin, E. E.; Idrisova, K. S.; Baishiganov, E. B.
(Inst. Khim. Nauk, Alma-Ata, Kazakhstan). Izv. Akad. Nauk Resp. Kaz.,
Ser. Khim., (3), 67-71 (Russian) 1992. CODEN: IARREQ.
DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic
Chemistry) Section cross-reference(s): 35, 67

Crown ether chlorosulfonyl derivs. were immobilized on
styrene-divinylbenzene copolymer based anion exchangers to afford
the title phase transfer catalysts I ($m = 0, 2, 6$; $p = 0, 1$; $n = 0, 1, 2$).
Phase-transfer catalytic activity was evaluated in the nucleophilic
substitution reaction of $n\text{-BuBr}(\text{org.}) + \text{KI}(\text{aq.}) @ n\text{-BuI}(\text{org.}) + \text{KBr}(\text{aq.})$.
Using catalyst I ($m = 6, n = 2, p = 1$) the BuI yield passed through a
max. (90.1%) as a function of increasing crown ether content in the
polymer; the max. catalytic activity corresponded to 20% active crown
ether groups on the support. The catalytic activity increased as a
function of spacer length; thus, BuI yield was 67.6, 79.4, and 90.1%
resp. for catalysts I (m, n, p given: 0,2,0; 2,2,1; 6,2,1). Catalytic activity
as a function of support structure decreased in the series
macro-cross-linked > macroporous > gel. KI or NaI afforded higher BuI
yields depending on the dimension of the crown ether cavity in I.

Keywords

polymer crown ether phase transfer catalyst
nucleophilic substitution phase transfer catalyst

Index Entries

Anion exchangers

crown ethers immobilized on, as phase-transfer nucleophilic
substitution reaction catalysts

Polymer-supported reagents
crown ethers, as phase-transfer nucleophilic substitution reaction
catalysts
Substitution reaction, nucleophilic
mechanism of polymer-supported crown ether catalyzed
Crown compounds
ethers, polymer-supported, as phase-transfer nucleophilic
substitution reaction catalysts
Substitution reaction catalysts
nucleophilic, phase-transfer, polymer-supported crown ethers
85576-25-6
100603-64-3
126867-37-6
immobilization of, on anion exchangers, phase transfer
nucleophilic substitution reaction catalysts by
109-65-9
nucleophilic substitution reaction of, with alkali metal iodides
catalyzed by polymer-bound crown ethers
7681-11-0, reactions
7681-82-5, reactions
nucleophilic substitution reaction of, with bromobutane catalyzed by
polymer-bound crown ethers
9003-70-7, aminoalkylaminomethylated, reaction products with crown
ether chlorosulfonyl derivs.
126867-40-1, polymer supported
130085-37-9, aminoalkylaminomethylated, reaction products with
crown ether chlorosulfonyl derivs.
144214-55-1, polymer supported
144214-56-2, polymer supported
144214-57-3, polymer supported
144214-58-4, polymer supported
144214-59-5, polymer supported
prepn. and phase-transfer catalytic activity of, for nucleophilic
substitution reaction of alkali metal iodide with
bromobutane
542-69-8
prepn. of

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117:150525

Asymmetric reduction of butyl pyruvate catalyzed by immobilized
glycerol dehydrogenase in organic-aqueous biphasic media.
Nakamura, Kaoru; Takano, Satoshi; Terada, Kumi; Ohno, Atsuyoshi
(Inst. Chem. Res., Kyoto Univ., Uji 611, Japan). Chem. Lett., (6), 951-4
(English) 1992. CODEN: CMLTAG. ISSN: 0366-7022. DOCUMENT
TYPE: Journal CA Section: 23 (Aliphatic Compounds) Section
cross-reference(s): 9
The rate of asym. redn. of Bu pyruvate catalyzed by glycerol
dehydrogenase is significantly enhanced when the enzyme system is
immobilized by a water-adsorbent polymer and the reaction is run in an
org. solvent with cyclopentanol as reducing reagent.

Keywords

asym redn catalyst polymer supported enzyme
butyl pyruvate enzymic asym redn
glycerol dehydrogenase asym redn pyruvate

Index Entries

Polymer-supported reagents
glycerol dehydrogenase immobilized on water-adsorbent polymers,
as catalyst for asym. redn. of Bu pyruvate with
cyclopentanol in hexane

Reduction catalysts

stereoselective, glycerol dehydrogenase immobilized on water-adsorbent polymers, Bu pyruvate with cyclopentanol in hexane

Reduction

stereoselective, of Bu pyruvate with cyclopentanol in hexane catalyzed by glycerol dehydrogenase immobilized on water-adsorbent polymers

20279-44-1

asym. redn. of, catalyzed by polymer-immobilized glycerol dehydrogenase

9028-14-2, polymer-immobilized

catalysts, with coenzyme, for asym. redn. of Bu pyruvate with cyclopentanol in hexane

53-84-9

coenzyme, for polymer-immobilized glycerol dehydrogenase, for asym. redn. of Bu pyruvate with cyclopentanol in hexane

34451-18-8

prepn. of, via pyruvate asym. redn. in hexane catalyzed by polymer-supported enzyme

96-41-3

reducing agent, for asym. redn. of Bu pyruvate in hexane catalyzed by polymer-immobilized enzyme

9003-04-7

water-adsorbent polymer, for immobilization of glycerol dehydrogenase catalyst for asym. redn. of Bu pyruvate in hexane

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117:97999

Foreword: chemical immobilization in chemistry.

Mottola, Horacio A. (Dep. Chem., Oklahoma State Univ., Stillwater, OK 74078-0447, USA). Chem. Modif. Surf., Proc. Symp., 4th, 1-14

(English) 1992. CODEN: 57ZAAZ. DOCUMENT TYPE: Journal;

General Review CA Section: 66 (Surface Chemistry and Colloids)

Section cross-reference(s): 7, 37, 57, 67

A review with 55 refs.

Keywords

review surface chem polymer modification

immobilization surface catalyst enzyme review

Index Entries

Surface

chem. modification of

Catalysts and Catalysis

Enzymes

immobilization of

Chemisorption

surface modification by

Polymers, reactions

surface modification of

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117:65758

Assessment of catalyst-modified conducting polymers for the development of amperometric dehydrogenase electrodes.

Schuhmann, W. (Tech. Univ. Muenchen, Freising-Weihenstephan D-8050, Germany). GBF Monogr., 17(Biosens.: Fundam., Technol.

Appl.), 115-18 (English) 1992. CODEN: GBMOEB. DOCUMENT

TYPE: Journal CA Section: 9 (Biochemical Methods) Section

cross-reference(s): 37, 72

The application of dehydrogenases covalently bound to controlled-porous glass and phys. retained by means of a dialysis membrane in front of a chloranil-modified conducting polymer electrode is investigated. By this method, as reproducible amt. of enzyme can be kept near the catalytically active electrode, and thus amperometric dehydrogenase electrodes can be compared with respect to the electrocatalytic properties of the redox polymer film.

Keywords

amperometry enzyme electrode polymer
dehydrogenase immobilization porous glass electrode

Index Entries

Polymers, uses
chloranil-modified conducting, in amperometric dehydrogenase electrodes
Electrodes
bio-, enzyme, amperometric, with immobilized dehydrogenase, catalyst-modified conducting polymers assessment for
Glass, oxide
porous, dehydrogenase immobilized on, in amperometric enzyme electrodes
118-75-2, biological studies
conducting polymer electrode modified with, in amperometric hydrogenase electrodes
9035-82-9, immobilized
in amperometric enzyme electrodes, catalyst-modified conducting polymers assessment for

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124:31305

Polymer reagents. Recent developments.
Oyama, Toshiyuki; Chujo, Yoshiki (Grad. Sch. Eng., Kyoto Univ., Kyoto 606-01, Japan). Kagaku (Kyoto), 50(12), 766-7 (Japanese) 1995.
CODEN: KAKYAU. ISSN: 0451-1964. DOCUMENT TYPE: Journal;
General Review CA Section: 38 (Plastics Fabrication and Uses)
Section cross-reference(s): 7, 67
A review with 14 refs. on polymeric catalysts with high selectivity, focussing immobilization of enzymes, polymer-protected metal clusters, and dendrimers having Ni complexes at their ends.

Keywords

review polymeric catalyst enzyme immobilization
polymer protected metal cluster review
dendrimer nickel catalyst review

Index Entries

Catalysts and Catalysis
Polymer-supported reagents
Dendritic polymers
Enzymes
Polymers, uses
recent developments of polymeric catalysts

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122:241151

Acrylic reactive copolymer membranes.
Abel, Christiane; Malsch, Guenter; Lehmann, Ingeburg; Ziegler,

Hans-Joerg; Scharnagl, Nico; Becker, Margot; Hicke, Hans-George (Inst. Chem., GKSS Forschungszentrum Geesthacht GmbH, Teltow D-14513, Germany). Angew. Makromol. Chem., 226, 71-87 (German) 1995. CODEN: ANMCBO. ISSN: 0003-3146. DOCUMENT TYPE: Journal CA Section: 37 (Plastics Manufacture and Processing) Section cross-reference(s): 35, 38

The copolymn. of acrylonitrile with maleic anhydride was investigated to synthesize acrylic reactive polymers for manuf. of membranes that serve as support for covalent enzyme immobilization. The free-radical copolymer synthesis was carried out in soln. (DMF, AcNMe₂, γ -butyrolactone, ethylene carbonate), by pptn. polymn. (dioxane), and by bulk polymn. The polymers were characterized using IR spectroscopy, elementary anal., NMR spectroscopy, gel-permeation chromatog., viscosity measurements, osmometry, and potentiometry. The kinetic parameters were followed by dilatometric measurements up to high conversions. The anhydride content in the monomer mixts. showed a significant influence on the rate of polymn. and the viscosity-av. mol. wt. (M_h). With raised concn. of anhydride the polymn. rate and mol. wts. decreased. Film-forming polymers ($M_h > 30,000$) could be obtained by all copolymn. procedures with the exception of soln. polymn. in DMF or AcNMe₂. The content of maleic anhydride in the membrane polymers did not exceed 5 mol-%, even though the maleic anhydride content in the monomer mixts. was raised up to the equimolar mixt. Nevertheless, such low maleic anhydride content of prepd. membranes was enough for successful enzyme immobilization with amyloglucosidase (copolymer was prepd. by γ -butyrolactone, $M_h = 49,000$, anhydride content = 0.3 mol-%).

Keywords

acrylonitrile maleic anhydride copolymn
amyloglucosidase membrane immobilization

Index Entries

Polymer-supported reagents
amyloglucosidase, on acrylonitrile-maleic anhydride copolymers
Polymerization catalysts
radical, AIBN; for acrylonitrile with maleic anhydride
Kinetics of polymerization
Polymerization
radical, of acrylonitrile with maleic anhydride
78-67-1
acrylonitrile-maleic anhydride copolymn. catalyst
68-12-2, uses
96-48-0
96-49-1
123-91-1, uses
127-19-5
acrylonitrile-maleic anhydride copolymn. solvent
9032-08-0
25765-19-9
prepn. of membranes for immobilization of enzymes
108-31-6, reactions
radical copolymn. with acrylonitrile
107-13-1, reactions
radical copolymn. with maleic anhydride

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121:300165

Reaction of Epoxides with Chlorocarbonylated Compounds Catalyzed by Hexaalkylguanidinium Chloride.

Gros, P.; Le Perchec, P.; Senet, J. P. (LMOPS, CNRS, Vernaison 69390, Fr.). J. Org. Chem., 59(17), 4925-30 (English) 1994. CODEN:

JOCEAH. ISSN: 0022-3263. DOCUMENT TYPE: Journal CA

Section: 21 (General Organic Chemistry)

Silica-supported guanidinium chloride (PBGSiCl) exhibits efficient chemo- and regiospecific catalytic activity in the ring opening of epoxides with various electrophiles. This reaction allows the prepn. of b-chloro esters and b-chloro chloroformates in high yield under neutral conditions which offer product stability and ease of product isolation.

Keywords

epoxide cleavage chlorocarbonyl catalyst alkylguanidinium silica
guanidinium silica catalyst cleavage epoxide chlorocarbonyl
chloroalkyl ester

Index Entries

Epoxides

cleavage of, with chlorocarbonylated compds. catalyzed by
silica-supported guanidinium chloride

Ring cleavage catalysts

silica-supported guanidinium chloride, for epoxides with
chlorocarbonylated compds.

2530-87-2

butylamination of

75-36-5

98-88-4

503-38-8

814-68-6

cleavage by, of epoxides catalyzed by silica-supported
guanidinium chloride

558-30-5

6931-54-0

cleavage of, with acetyl chloride catalyzed by silica-supported
guanidinium chloride

75-56-9, reactions

96-09-3

503-30-0

2426-08-6

2855-19-8

cleavage of, with chlorocarbonylated compds. catalyzed by
silica-supported guanidinium chloride

159257-94-0, silica-supported

prepn. and catalysis by, of cleavage of epoxides by
chlorocarbonylated compds.

159257-95-1

prepn. and immobilization of, on silica

31024-56-3

prepn. and reaction of, with tetrabutylchloroformamidinium chloride

623-60-9

628-11-5

817-80-1

829-23-2

942-95-0

5888-79-9

6509-93-9

36220-92-5

57576-87-1

91451-45-5

92230-78-9

106813-40-5

109047-49-6

151320-58-0

159257-96-2

159257-97-3

159257-98-4

159257-99-5
 159258-00-1
 159258-01-2
 159258-02-3
 159258-03-4
 159258-04-5
 prepn. of
 81363-13-5
 reaction of, with [(butylamino)propyl]trimethoxysilane

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121:4526

Polymeric adduct supports.

Heilmann, Steven M.; Rasmussen, Jerald K.; Krepski, Larry R.;
 Milbrath, Dean S.; Coleman, Patrick L.; Walker, Margaret M.
 (Minnesota Mining and Mfg. Co., USA). U.S. US 5292840 A 8 Mar
 1994, 22 pp. Cont.-in-part of U.S. 4,871,824. (United States of
 America). CODEN: USXXAM. CLASS: ICM: C08F020-58. ICS:
 C08F022-38. NCL: 526304000. APPLICATION: US 89-335835 10
 Apr 1989. PRIORITY: US 87-25605 13 Mar 1987; US 88-158258 19
 Feb 1988. DOCUMENT TYPE: Patent CA Section: 9 (Biochemical
 Methods) Section cross-reference(s): 16, 35

Azlactone-functional polymer supports are useful reactive supports for
 the attachment of functional materials to provide novel adduct beads.
 The adduct beads are useful as complexing agents, catalysts,
 polymeric reagents, chromatog. supports, and as enzyme or other biol.
 active supports. Novel carboxylate-functional polymer beads are
 intermediates in the prepn. of the azlactone-functional beads. The
 polymeric adduct supports have units of
 $-\text{CH}_2\text{C}(\text{R}_1)[\text{C}(\text{O})\text{NHC}(\text{R}_2)(\text{R}_3)(\text{CH}_2)_n\text{C}(\text{O})\text{XG}]$ ($\text{R}_1 = \text{H}, \text{CH}_3$; $\text{R}_2, \text{R}_3 =$
 $\text{C}_1\text{-14 alkyl}, \text{C}_3\text{-14 cycloalkyl}, \text{aryl group having 5-12 ring atoms}, \text{arenyl}$
 $\text{group having 6-26 carbon and 0-3 S, N, and nonperoxidic O}$
 $\text{heteroatoms}; \text{or } \text{R}_2\text{CR}_3 \text{ form carbocyclic ring contg. 4-12 ring atoms}; n$
 $= 0, 1; \text{X} = \text{O}, \text{S}, \text{NH}, \text{NR}_4; \text{R}_4 = \text{alkyl}, \text{aryl}; \text{G} = \text{residue of HXG which}$
 $\text{performs the absorbing, complexing, catalyzing, sepg., or reagent}$
 $\text{function of the support}) \text{ and 0-99 M parts of crosslinking monomer}$
 $\text{incorporated therein. Beads of N,N-dimethylacrylamide}$
 $(\text{DMA})\text{-N,N'-bis(acryloyl)piperazine (PIP)-2-vinyl-4,4-dimethylazlactone}$
 $(\text{VDM}) \text{ copolymer (42:16:42) and beads of methylene-bisacrylamide}$
 $(\text{MBA})\text{-PIP-VDM copolymer (42:16:42) were prepd. The VDM}$
 $\text{copolymer beads were derivatized with phenethylamine, taurine, or}$
 $\text{octylamine to make beads that could be used in hydrophobic}$
 $\text{interaction chromatog., ion exchange chromatog., or reversed-phase}$
 chromatog., resp.

Keywords

azlactone functional polymer reactive support
 complexing agent polymer adduct support
 catalyst polymer adduct support
 chromatog polymer adduct support
 enzyme polymer adduct support
 biomol polymer adduct support

Index Entries

Chelating agents
 (azlactone-functional) polymer adduct beads as
 Immunoassay
 IgG immobilization on azlactone functional polymer-coated
 polystyrene wells for improved
 Catalysts and Catalysis
 Dyes
 Pharmaceuticals

Agglutinins and Lectins
 Antibodies
 Antigens
 Blood-coagulation factors
 Enzymes
 Histones
 Hormones
 Receptors
 Vitamins
 adducts with (azlactone-functional) polymer supports
 Adsorbents
 adducts with (azlactone-functional) polymers, for chromatog. and other uses
 Polymers, preparation
 adducts, with biol. active materials and other substances, for complexing agents and catalysts and reagents and chromatog. supports
 Lolium perenne
 allergenic proteins of, improved binding of, to azlactone functional polymer-coated polystyrene wells
 Anion exchangers
 derivatized azlactone functional polymer beads as
 Glass, oxide
 Silica gel, miscellaneous
 derivatized azlactone functional polymer coating properties on
 Chromatography
 hydrophobic interaction, phenethylamine derivatized azlactone functional polymer beads for
 Polyamide fibers, miscellaneous
 membrane, derivatized azlactone functional polymer coating properties on
 Membranes
 nylon, derivatized azlactone functional polymer coating properties on
 Immobilization, biochemical
 of IgG and allergenic proteins on azlactone functional polymer-coated polystyrene wells
 Allergens
 proteins, improved binding of, to azlactone functional polymer-coated polystyrene wells
 Cell
 surface markers, adducts with (azlactone-functional) polymer supports
 Ion exchangers
 taurine-derivatized azlactone functional polymer beads as
 Proteins, specific or class
 A, conjugates, iodine-125-labeled, with azlactone functional polymer beads
 Immunoglobulins
 G, azlactone functional beads contg. immobilized protein A for affinity chromatog. of, from human blood serum
 Amino acids, preparation
 adducts, with (azlactone-functional) polymer supports, for complexing agents and catalysts and reagents and chromatog. supports
 Polymers, preparation
 azlactone group-contg., conjugates with radiolabeled protein A
 Chemicals
 bio-, adducts with (azlactone-functional) polymers, for chromatog. and other uses
 Chromatography, column and liquid
 high-performance, stationary phases, azlactone functional beads for
 Chromatography
 reversed-phase, stationary phases, octylamine-derivatized

azlactone functional polymer beads prepn. for
 Chromatography
 supports, (azlactone-functional) polymer adduct beads as
 129825-50-9, conjugates with protein A
 132743-60-3, conjugates with protein A
 132774-05-1, reaction products with choline salicylate
 beads, prepn. of
 1314-23-4, miscellaneous
 ceramic beads, derivatized azlactone functional polymer coating
 properties on
 132763-35-0
 controlled-pore glass beads coating with
 9002-88-4
 derivatized azlactone functional polymer coating properties on
 particles of
 29513-50-6, adducts with catalysts and biol. active substances and
 others
 for complexing agents and catalysts and reagents and chromatog.
 supports
 9001-09-6
 improved binding of, to azlactone functional polymer-coated
 polystyrene wells
 110-18-9
 2016-36-6
 6674-22-2
 8007-43-0
 9017-68-9
 37383-10-1
 132801-50-4
 155566-70-4
 in prepn. of azlactone functional polymer support
 3529-10-0, reaction products with azlactone functional polymer beads
 prepn. and anion-exchange properties of
 155566-63-5, conjugates with radiolabeled protein A
 prepn. and characterization of
 64-04-0, reaction products with azlactone functional polymer beads
 prepn. and hydrophobic interaction properties of
 107-35-7, reaction products with azlactone functional polymer beads
 prepn. and ion-exchange properties of
 116000-33-0
 155566-63-5
 prepn. and reaction of, in prepn. of azlactone functional polymer
 support
 74-89-5, reaction products with azlactone functional polymer beads
 111-86-4, reaction products with azlactone functional polymer beads
 prepn. and use of, in reversed-phase chromatog.
 143-27-1, reaction products with azlactone functional polymer beads
 prepn. and use of, in reversed-phase chromatog. of low-mol.-wt.
 materials
 155566-67-9, conjugates with protein A
 155566-68-0, conjugates with protein A
 prepn. of
 81094-98-6
 prepn. of and coating of polystyrene wells with
 67-56-1, reaction products with azlactone functional polymer
 75-04-7, reaction products with azlactone functional polymer
 32241-35-3, reaction products with methanol or ethylamine
 32241-35-3
 prepn. of and coating properties of, for org. and inorg. substrates
 109-73-9, reaction products with azlactone functional polymer beads
 prepn. of and size exclusion characteristics of
 27416-12-2
 129825-50-9
 132743-60-3
 132743-61-4

132763-34-9
 132774-05-1
 prepn. of beads of
 116000-37-4
 132763-33-8
 155566-63-5
 155566-65-7
 155566-73-7
 prepn. of, as azlactone functional polymer support
 155566-66-8
 155566-67-9
 prepn. of, as reactive support
 107-15-3, reactions
 110-26-9
 2680-03-7
 29513-26-6
 29513-50-6
 reaction of, in prepn. of azlactone functional polymer support

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120:193008

Study of amino acid-containing polysiloxane supported catalysts. VIII.
 Synthesis and hydrogenation activity of
 poly[g-(glycylthreonine)propylsiloxane]-palladium catalysts.
 You, Jiang; Liu, Jiwan; Mao, Yunzhong; Chen, Yichang (Dep. Chem.,
 Wuhan Univ., Wuhan 430072, Peop. Rep. China). Lizi Jiaohuan Yu
 Xifu, 8(1), 26-9 (Chinese) 1992. CODEN: LJYXE5. ISSN: 1001-5493.

DOCUMENT TYPE: Journal CA Section: 37 (Plastics Manufacture and
 Processing) Section cross-reference(s): 38, 45, 67
 Poly[g-(glycylthreonine)propylsiloxane]-palladium catalysts having
 different N-Pd molar ratios were prepd. IR spectra and XPS results
 showed that the active center was a complex composed of COOH
 group in the amino acid ligand and PdCl₂ mol. The catalyst showed
 high hydrogenation activity for several org. substrates. The initial
 hydrogen absorption rate for hydrogenation of acrylonitrile was 2593.5
 mL/min.mmol Pd when the N-Pd molar ratio was 15.1. The catalytic
 activity in polar org. solvent was better than in nonpolar solvent.

Keywords

glycylthreonine siloxane palladium hydrogenation catalyst

Index Entries

Siloxanes and Silicones, compounds
 (glycylthreonine)propyl group-contg., palladium complexes, prepn.
 and hydrogenation activity of
 Hydrogenation catalysts
 (glycylthreonine)propylsiloxane-palladium complexes, prepn. and
 activity of
 Solvent effect
 on hydrogenation of acrylonitrile in presence of
 (glycylthreonine)propylsiloxane-palladium complex catalysts
 7631-86-9, uses
 (glycylthreonine)propyltriethoxysilane immobilization on
 7440-05-3, complexes with (glycylthreonine)propylsiloxanes
 catalysts, prepn. and hydrogenation activity of
 79-10-7, reactions
 98-95-3, reactions
 100-42-5, reactions
 107-13-1, reactions
 110-83-8, reactions
 872-05-9
 hydrogenation of, activity of

(glycylthreonine)propylsiloxane-palladium complex catalysts
for
153702-39-7
prepn. and immobilization of, on silica
153893-46-0
prepn. and reaction of, with silanes
72-19-5, reactions
reaction of, with chloroacetyl chloride
919-30-2
reaction of, with chloroacetylthreonine
79-04-9
reaction of, with threonine

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119:180886

Catalysis of hydrosilylation. Part XXII. Polymer-protected immobilized platinum complex catalysts for gas-phase hydrosilylation of acetylene.

Marciniec, Bogdan; Foltynowicz, Zenon; Lewandowski, Mariusz (Fac. Chem., A. Mickiewicz Univ., Poznan 60-780, Pol.). Appl. Organomet. Chem., 7(3), 207-12 (English) 1993. CODEN: AOCHEX. ISSN: 0268-2605. DOCUMENT TYPE: Journal CA Section: 29

(Organometallic and Organometalloidal Compounds) Section

cross-reference(s): 35, 67

A platinum catalyst (hexachloroplatinic acid dissolved in ethanol) was immobilized by anchoring via amine (A) to silica [SA; prepd. by treatment of silica gel with {3-[N-(2-aminoethyl)amino]propyl}trimethoxysilane and then hexamethyldisilazane] and by mercapto groups (B) to silica [SB; prepd. by treatment of silica gel with {3-[N-(2-aminoethyl)amino]propyl}trimethoxysilane and then (3-mercaptopropyl)trimethoxysilane] followed by formation of a polymer layer which protected the catalyst against leaching. These catalysts (A and B) as well as precatalysts (SA-Pt, SB-Pt) which were not protected by polymer were tested in the gas-phase hydrosilylation reaction of acetylene with trichlorosilane. The catalytic parameters (yield 80%, selectivity 100%) obtained under optimal conditions prove the advantage of catalyst A over 300 h reaction time by the flow method.

Keywords

polymer protected immobilized platinum catalyst hydrosilylation
gas phase platinum catalyzed hydrosilylation acetylene
vinylsilane
silica immobilized platinum catalyst hydrosilylation

Index Entries

Polymer-supported reagents

polymers, contg. silica immobilized platinum complexes, polymeric membrane formation by, for immobilized platinum complex hydrosilylation catalystsg

75-94-5

formation of, from platinum-catalyzed hydrosilylation of acetylene
10025-78-2

platinum-catalyzed hydrosilylation by, of acetylene

74-86-2, reactions

platinum-catalyzed hydrosilylation of

79-41-4, polymers, contg. silica immobilized platinum complexes, uses polymeric membrane formation by, for immobilized platinum complex hydrosilylation catalysts

16941-12-1, silica gel-immobilized, polymer-protected

prepn. and catalytic activity of, for hydrosilylation of acetylene

150432-51-2, Reaction products with silica gel, platinum complexes,

polymer-protected
 prepn. and catalytic activity of, for the hydrosilylation of acetylene
 1760-24-3, Reaction products with silica gel, platinum complexes,
 polymer-protected
 silica gel immobilization and catalytic activity of, for hydrosilylation
 of acetylene

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118:164441

Modification of the microenvironment of enzymes in organic solvents.

Substitution of water by polar solvents.

Reslow, Mats; Adlercreutz, Patrick; Mattiasson, Bo (Chem. Cent., Univ.
 Lund, Lund S-221 00, Swed.). Biocatalysis, 6(4), 307-18 (English)

1992. CODEN: BIOCED. ISSN: 0886-4454. DOCUMENT TYPE:

Journal CA Section: 9 (Biochemical Methods) Section

cross-reference(s): 7, 21

Enzyme catalysis in water-immiscible org. solvents is strongly
 influenced by the amt. of water present in the reaction mixt. Effects of
 substitution of part of the water by other polar solvents were studied. In
 an alcoholysis reaction catalyzed by chymotrypsin deposited on celite,
 it was possible to exchange half of the water by formamide, ethylene
 glycol, or DMSO with often increased initial reaction rate. Furthermore,
 these substitutions caused the suppression of the competing hydrolysis
 reaction. However, formamide caused enzyme inactivation, and
 ethylene glycol participated as a reactant in the alcoholysis to some
 extent, hence DMSO was considered the best water substitute among
 the solvents tested. These effects were noted for
 chymotrypsin-catalyzed alcoholysis in several water immiscible
 solvents and also for interesterification reactions catalyzed by Candida
 cylindracea lipase on celite. In the latter case, a change in the
 stereoselectivity was obsd. At a low water content, a high
 stereoselectivity was obsd.; when the amt. of polar solvent was
 increased, either by doubling the water content or adding an equal amt.
 of DMSO, the stereoselectivity decreased.

Keywords

enzyme catalysis org solvent water
 synthesis org enzyme catalyst

Index Entries

Kieselguhr

enzymes immobilization on, for synthesis in org. solvents

Enzymes

in org. solvents, polar solvent substitution for water effect on

Immobilization, biochemical

of enzymes, on celite for synthesis in org. solvents

Solvent effect

on enzyme catalysis in org. solvents, polar solvent substitution for
 water in relation to

Synthesis

org., enzymes in, water substitution by polar solvents in relation to

9001-62-1

9004-07-3

in org. solvents, polar solvent substitution for water effect on

7732-18-5, miscellaneous

polar solvent substitution for, in enzyme catalysis

108-20-3

108-88-3, biological studies

110-54-3, biological studies

141-78-6, biological studies

142-96-1

60-29-7, biological studies

75-05-8, biological studies
 solvent, chymotrypsin activity in, water substitution in relation to
 513-85-9
 56-81-5, uses
 67-68-5, uses
 68-12-2, uses
 75-12-7, uses
 107-21-1, uses
 water replacement by, for enzyme catalysis in org. solvents

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118:97273

Determination of L-glutamate and L-glutamine by flow-injection analysis
 and chemiluminescence detection: comparison of an enzyme
 column and enzyme membrane sensor.

Blankenstein, Gert; Preuschoff, Frank; Spohn, Uwe; Mohr, Karl-Heinz;
 Kula, Maria-Regina (Inst. Enzyme Technol., Heinrich Heine Univ.
 Duesseldorf, P.O. Box 20 50, D(W)-5170, Julich, Germany). Anal.
 Chim. Acta, 271(2), 231-7 (English) 1993. CODEN: ACACAM. ISSN:
 0003-2670. DOCUMENT TYPE: Journal CA Section: 9 (Biochemical
 Methods) Section cross-reference(s): 80

Glutamate and glutamine were detd. by luminol chemiluminescence
 with flow-injection anal. (FIA) based on immobilized L-glutamate
 oxidase and glutaminase coupled with peroxidase. The lab.-made
 flow-through cell of the detector has a measured vol. of only 15 mL. The
 hydrogen peroxide produced in the first reaction is detected by luminol
 chemiluminescence catalyzed by peroxidase. A membrane sensor
 and enzyme reactor based on immobilized hydrogen peroxidase are
 used for the detn. of hydrogen peroxide. It was obsd. that Arthromyces
 ramosus peroxidase produced a 100 times stronger luminescence
 signal than horseradish peroxidase. By immobilization of the microbial
 peroxidase on a membrane inside the flow cell, simplification could be
 achieved with regard to app., reagents and operation. The sensitivity
 of detection was considerably improved. In addn., the concept of a
 hydrogen peroxide biosensor was realized. The membrane sensor
 shows a detection limit of $1 \times 10^{-7} \text{M}$ for L-glutamate and $1 \times 10^{-6} \text{M}$ for
 L-glutamine. The calibration graphs were approx. linear in the range of
 1×10^{-7} - $6 \times 10^{-5} \text{M}$ for L-glutamate and 1×10^{-6} - $2.5 \times 10^{-3} \text{M}$ for
 L-glutamine. The membrane sensor was stable over a period of 10 wk
 (>1000 analyses).

Keywords

glutamate detn flow injection chemiluminescence
 glutamine detn flow injection chemiluminescence
 flow injection analysis glutamate glutamine
 chemiluminescence glutamate glutamine detn
 biocatalytic reactor glutamate glutamine detn
 enzymic biosensor glutamate glutamine detn
 hydrogen peroxide detn biosensor

Index Entries

Glass, oxide
 controlled-pore, enzymes immobilization on, for reactors
 Immobilization, biochemical
 of enzymes, on controlled pore glass
 Reactors
 biocatalytic, for glutamic acid and glutamine detn.
 Biosensors
 enzymic, fiber-optic, hydrogen peroxide-selective, for glutamic acid
 and glutamine detn.
 13408-62-3
 catalyst, for luminol chemiluminometric detn. of L-glutamic acid

56-85-9, analysis
 56-86-0, analysis
 detn. of, by flow-injection anal. and chemiluminescence, enzyme
 column vs. enzyme sensor comparison for
 7722-84-1, analysis
 detn. of, glutamic acid and glutamine detn. in relation to
 9001-47-2, immobilized
 9003-99-0, immobilized
 39346-34-4, immobilized
 in glutamic acid and glutamine detn.

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117:114914

Pyrolysis and hydrolysis of diphenylmethane and sulfur-containing
 compounds immobilized on silica.
 Mitchell, Stuart C.; Lafferty, Christopher J.; Garcia, Roberto; Ismail,
 Khudzir; Snape, Colin E.; Buchanan, A. C., III; Britt, Phillip F.; Klavetter,
 Elmer (Dep. Pure Appl. Chem., Univ. Strthclyde, Glasgow G1 1XL,
 UK). Prepr. Pap. - Am. Chem. Soc., Div. Fuel Chem., 37(4), 1691-700
 (English) 1992. CODEN: ACFPAI. ISSN: 0569-3772. DOCUMENT
 TYPE: Journal CA Section: 51 (Fossil Fuels, Derivatives, and Related
 Products)
 The use of high pressures and dispersed catalysts, such as sulfided
 molybdenum in fixed-bed hydrolysis of coals increases tar yields.
 In order to improve the understanding of these phenomena, particularly
 in relation to cleavage of C-C and C-S bonds, expts. are conducted on
 samples of silica-immobilized C₆H₆, Ph₂CH₂, thioanisole, and
 dibenzothiophene (I). These model substrates have the inherent
 advantage that they do not soften and thus stay in the reactor. For the
 surface-immobilized C₆H₆, the SiO-C bond linking the substrate to the
 surface is reasonably stable and does not break until 550° (peak max.)
 with a high yield of C₆H₆ being achieved at 150 bars H. For Ph₂CH₂,
 the use of 150 bars H and the Mo catalyst reduced the peak evolution
 temps. for C₆H₆ and PhMe, demonstrating their sep. contributions to
 promoting C-C bond cleavage. Desulfurization of I occurred only in H
 and the thermal decompn. of thioanisole was altered markedly by the
 Mo catalyst.

Keywords

pyrolysis phenylmethane thioanisole dibenzothiophene
 silica adsorption catalyst pyrolysis
 immobilization adsorption catalyst pyrolysis
 phenylmethane catalysis pyrolysis
 thioanisole catalysis pyrolysis
 dibenzothiophene catalysis pyrolysis

Index Entries

Coal liquefaction catalysts
 molybdenum, sulfurized, hydrolysis of model compds. in
 presence of
 7439-98-7, sulfurized derivs.
 catalysts, in pyrolysis of org. compds. immobilized on silica
 71-43-2, reactions
 100-68-5
 101-81-5
 132-65-0
 pyrolysis and hydrolysis of, as immobilized on silica, as
 coal-liquefaction model

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117:15180

Metal complex immobilized on inorganic support.

Miki, Keiji (Kogyo Gijutsuin, Japan). Jpn. Kokai Tokkyo Koho JP 04071646 A2 6 Mar 1992 Heisei, 6 pp. (Japan). CODEN: JKXXAF.

CLASS: ICM: B01J031-26. ICS: B01J031-16. ICA: C07C027-12;

C07C049-747; C07D487-22. APPLICATION: JP 90-182179 10 Jul

1990. DOCUMENT TYPE: Patent CA Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms) Section

cross-reference(s): 78

The title complex comprises a long-chain compd. (1-1.5 mol with respect to the complex), which surrounds the complex and is bonded to the support. The complex is useful as stable and selective catalyst.

Keywords

metal complex immobilized catalyst

Index Entries

Coordination compounds

catalysts, from immobilized

Catalysts and Catalysis

Epoxidation catalysts

Oxidation catalysts

immobilized metal complexes

937-14-4

epoxidn. catalysts for

112-04-9

141896-55-1

141896-56-2

141896-57-3

141915-01-7

immobilization of metal complexes using, as catalysts

110-86-1, cobalt, iron complex

574-93-6, cobalt complex

7439-89-6, complex with phthalocyanine, pyridine

7440-48-4, complex with pyridine

16456-81-8

85542-30-9

immobilization of, as catalysts

119-64-2

oxidn. catalysts for

29059-07-2

51854-14-9

prepn. of, immobilized metal complex catalysts for

96-09-3

prepn. of, immobilized metal-complex catalysts for

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116:234880

Immobilization of rhodium complexes of amine-functionalized BDPP and chiraphos on a soluble form of the strongly acidic Nafion-H cation exchange resin.

Toth, Imre; Hanson, Brian E. (Dep. Chem., Virginia Polytech. Inst. and State Univ., Blacksburg, VA 24061, USA). J. Mol. Catal., 71(3), 365-71 (English) 1992. CODEN: JMCADS. ISSN: 0304-5102.

DOCUMENT TYPE: Journal CA Section: 22 (Physical Organic Chemistry) Section cross-reference(s): 23, 34

The sol. form of the superacid exchange resin, Nafion-NR-50, is used for the first time as a precursor to a solid supported asym.

hydrogenation catalyst. Addn. of the resin to solns. contg.

[BDPP(NMe₂)₄RhNBD]⁺ or [chiraphos(NMe₂)₄RhNBD]⁺ leads to the

pptn. of a finely divided form of Nafion which contains the rhodium

complexes protonated at the amine nitrogens. Rates for the

hydrogenation of dehydroamino acids with these catalysts are much

faster than previously obtained with the identical complexes immobilized on large Nafion beads. The rates obtained are nearly as large as those obsd. for the corresponding homogeneous catalysts in methanol.

Keywords

Nafion supported rhodium hydrogenation catalyst
unsatd amino acid asym hydrogenation

Index Entries

Kinetics of hydrogenation
stereoselective, of unsatd. amino acid or ester derivs., catalytic
Hydrogenation catalysts
stereoselective, rhodium complexes immobilized on sol. form of
Nafion-H cation exchange resin, for unsatd. amino acid and
ester derivs.
Amino acids, reactions
unsatd., asym. hydrogenation of, immobilized rhodium catalyst for
21462-02-2
55065-02-6
60676-51-9
asym. hydrogenation of, immobilized rhodium catalysts for
130928-39-1, supported on sol. form of Nafion-H cation exchange resin
131220-86-5, supported on sol. form of Nafion-H cation exchange resin
catalysts, for asym. hydrogenation of unsatd. amino acid and ester
derivs.
10172-89-1
10512-92-2
21156-62-7
prepn. of

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116:129748

Flavin-containing polyanions; synthesis, activity, and immobilization in polyelectrolyte complexes.

Schoo, Herman F. M.; Challa, Ger (Lab. Polym. Chem., Univ. Groningen, Groningen 9747 AG, Neth.). *Macromolecules*, 25(6), 1633-8 (English) 1992. CODEN: MAMOBX. ISSN: 0024-9297.

DOCUMENT TYPE: Journal CA Section: 35 (Chemistry of Synthetic High Polymers) Section cross-reference(s): 7, 67

Linear polymers contg. both flavin units and COOH groups were prepd. by copolymn. of the appropriate styrene derivs. The catalytic activity of the resulting polyanions in aq. media was detd. for the aerobic oxidn. of 1-benzyl-1,4-dihydronicotinamide. A 69-fold (max.) increase of the activity of the flavin moieties was found after binding to the polyanions as compared to a low molar mass analog, which may be attributed to a higher polarity of the microenvironment of the catalyst and to H bonding of the flavin units to the COOH groups. The activity of the polyanions was dependent on the ;H of the medium, with an optimum at pH u 8. Complexation of the polyanions with polycations contg. pendent quaternary ammonium groups led to a small decrease in activity, the effect being larger with a higher charge d. of the polycation. The resulting polyelectrolyte complex gel particles were quite stable and could be used in a continuous reaction for many days without loss of activity. Finally, homopolymn. of the flavin-contg. monomer resulted in the 1st flavin homopolymer.

Keywords

flavin deriv polystyrene oxidn catalyst
benzyl-dihydronicotinamide oxidn catalyst flavin polyanion

Index Entries

Oxidation catalysts

flavin-contg. polyanion polyelectrolyte complexes, for
benzyldihydronicotinamide, prepn. and activity of

Ionomers

flavin-contg. polyanions, polyelectrolyte complexes, catalysts, for
oxidn. of benzyldihydronicotinamide, prepn. and activity of

Kinetics of oxidation

of benzyldihydronicotinamide, in presence of flavin-contg. polyanion
polyelectrolyte complexes

14684-43-6

138835-38-8

catalysts, for aerobic oxidn. of benzyldihydronicotinamide, as
model for flavin-contg. polyanions

121-44-8, reaction products with chloromethylated polystyrene,

compds. with styrene flavin deriv.-vinylbenzoic acid copolymer

9003-53-6, chloromethylated, compd. with triethylamine, compds. with

styrene flavin deriv.-vinylbenzoic acid copolymer

138835-39-9, hydrolyzed, compds. with chloromethylated polystyrene

compd. with triethylamine

catalysts, prepn. and activity of, for aerobic oxidn. of

benzyldihydronicotinamide

1565-41-9

esterification of, with potassium tert-butoxide

865-47-4

esterification of, with vinylbenzoyl chloride

952-92-1

oxidn. of, aerobic, catalysts for, flavin-contg. polyanion

polyelectrolyte complexes as, prepn. and activity of

91380-16-4, hydrolyzed

138835-40-2

prepn. and characterization of

91380-16-4

138835-39-9

prepn. and hydrolysis of

84740-98-7

prepn. and polymn. of, with methylstyrene flavin deriv.

136951-08-1

prepn. and polymn. of, with tert-Bu vinylbenzoate

1088-56-8

reaction of, with (chloromethyl)styrene

1592-20-7

reaction of, with lumiflavin

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125:339579

Silylation of the silica surface a review.

Van Der Voort, P.; Vansant, E. F. (Department Chemistry, University
Antwerpen, Wilrijk B-2610, Belg.). J. Liq. Chromatogr. Relat. Technol.,

19(17&18), 2723-2752 (English) 1996. CODEN: JLCTFC. ISSN:

1082-6076. DOCUMENT TYPE: Journal; General Review CA Section:

66 (Surface Chemistry and Colloids) Section cross-reference(s): 35,

36, 80

A review on silylated silica surfaces which have many applications in

anal. chem. (HPLC, ion exchange chromatog., size exclusion

chromatog., GC), synthetic chem. (heterogeneous catalysts, phase

transfer catalysts), biochem. (enzyme immobilization, affinity

chromatog.), and industry (composites, high-tech materials,

semiconductor devices). In all cases, the knowledge of their chem.

compn. and surface characteristics is of great importance for the

understanding and eventual improvement of their performance. A

general description of the silica surface and a summary of the different

modification techniques that were developed oxide surface silylation

are presented. The chlorosilylation of the silica surface (in liq. and gaseous phase) and the modification with aminosilanes are discussed in more detail, emphasizing the anal. techniques and skills that enable researchers to get a more profound insight into the reaction mechanisms and the nature and concn. of the created surface groups.
56 Refs.

Keywords

review silica surface silylation method application
chromatog catalyst immobilization silica silylation review

Index Entries

Catalysts and Catalysis

silica surface modification methods and catalytic applications

Adsorbed substances

Chains, chemical

Chromatography, column and liquid

silica surface silylation methods and applications

Amines, uses

silylation catalysts; silica surface silylation methods and applications

Silylation catalysts

surface; silica surface silylation methods and applications

Silanes

amino, reaction products, surface; silica surface silylation methods and applications

Silanes

chloro, reaction products, surface; silica surface silylation methods and applications

Polymerization

Silylation

surface, silica surface silylation methods and applications

7631-86-9, reaction products

surface; silica surface silylation methods and applications

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125:108494

Esterification reaction in organic solvents catalyzed by Candida cylindracea lipase immobilized on Jujiajibingxisuanqiangyizi [poly (2-hydroxyethyl methacrylate)].

Xu, Huixian; Li, Minqin; He, Binglin (Gaofenzi Huazue Yanjiusuo Inst., Nankai Daxue (Nankai Univ.), Tianjin 300071, Peop. Rep. China). Lizi Jiaohuan Yu Xifu, 11(4), 294-301 (Chinese) 1995. CODEN: LJYXE5.

ISSN: 1001-5493. DOCUMENT TYPE: Journal CA Section: 7

(Enzymes)

A series of poly (2-hydroxyethyl methacrylate) was synthesized by suspension polymn. The relationship between the activity of immobilized Candida cylindracea lipase (CCL) and the crosslinking degree and its carrier were studied. The esterification reaction of pentanol plus hexadecanoic acid in org. solvents (primarily hexane) catalyzed by immobilized CLL was studied. The immobilized lipase was active in the esterification reaction. The effects of pH and various kinds of substrate on this reaction catalyzed by immobilized CLL were discussed.

Keywords

esterification catalyst immobilized enzyme polyhydroxyethyl methacrylate

Index Entries

Immobilization, biochemical

Candida rugosa

esterification reaction in org. solvents catalyzed by Candida cylindracea lipase immobilized on poly (2-hydroxyethyl methacrylate)

9001-62-1

25249-16-5

57-10-3, reactions

71-36-3, reactions

71-41-0, reactions

78-83-1, reactions

78-92-2

esterification reaction in org. solvents catalyzed by Candida cylindracea lipase immobilized on poly (2-hydroxyethyl methacrylate)

110-54-3, uses

solvent; esterification reaction in org. solvents catalyzed by Candida cylindracea lipase immobilized on poly (2-hydroxyethyl methacrylate)

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124:7065

Biochemically active agents for chemical catalysis and cell receptor activation.

Kossovsky, Nir; Sponsler, Edward; Gelman, Andrew; Rajguru, Samir (The Regents of the University of California, USA). U.S. US 5460830 A 24 Oct 1995, 13 pp. Cont.-in-part of U.S. 5,334,394. (United States of America). CODEN: USXXAM. CLASS: ICM: A61K009-16. NCL:

424493000. APPLICATION: US 93-145870 1 Nov 1993. PRIORITY:

US 90-542255 22 Jun 1990; US 91-690601 24 Apr 1991; US 93-199

4 Jan 1993. DOCUMENT TYPE: Patent CA Section: 15

(Immunochemistry) Section cross-reference(s): 1, 2, 3, 7, 9

A biol. active compn. made up of core particles or surfaces which are coated with a layer which is designed to allow attachment of biochem. reactive pairs (BRP's) without denaturing the BRP to the microparticles. BRP's which may be attached include ligand-receptor pairs, enzyme-substrate pairs, drug-receptor pairs, catalyst-reactant pairs, toxin-ligand pairs, absorbant-absorbate pairs and adsorbent-adsorbate pairs. In example, particles of tin oxide, ruthenium oxide, and silicon dioxide were prepd. Prepd. nanocryst. tin oxide was used for prepn., isolation and adsorption of human serum transferrin proteins, for prepn. of Epstein-Barr virus decoy for eliciting antibodies, and for prepn. of HIV membrane antigen decoys as vaccines.

Keywords

prepn particle biochem reactive pair

vaccine chem catalysis cell receptor activation

Index Entries

Antigens

HIV membrane; biochem. active agents for chem. catalysis and cell receptor activation

Ribonucleic acids

RNase pair; biochem. active agents for chem. catalysis and cell receptor activation

Absorbents

absorbate pair; biochem. active agents for chem. catalysis and cell receptor activation

Adsorbents

adsorbate pair; biochem. active agents for chem. catalysis and cell receptor activation

Antigens

antibody pair; biochem. active agents for chem. catalysis and cell receptor activation

Antibodies

antigen pair; biochem. active agents for chem. catalysis and cell receptor activation

Agglutinins and Lectins

binding pair; biochem. active agents for chem. catalysis and cell receptor activation

Antibiotics

Ceramic materials and wares

Vaccines

Albumins, biological studies

Glass, oxide

Metals, biological studies

Polymers, biological studies

biochem. active agents for chem. catalysis and cell receptor activation

Hemoglobins

carbon monoxide pair; biochem. active agents for chem. catalysis and cell receptor activation

Peptides, biological studies

carboxypeptidase A pair; biochem. active agents for chem. catalysis and cell receptor activation

Hormone receptors

hormone pair; biochem. active agents for chem. catalysis and cell receptor activation

Transferrins

immobilization of; biochem. active agents for chem. catalysis and cell receptor activation

Receptors

Toxins

ligand pair; biochem. active agents for chem. catalysis and cell receptor activation

Alloys, biological studies

metal; biochem. active agents for chem. catalysis and cell receptor activation

Carbohydrates and Sugars, uses

polymeric; biochem. active agents for chem. catalysis and cell receptor activation

Ribosome

proteins; biochem. active agents for chem. catalysis and cell receptor activation

Catalysts and Catalysis

reactant pair; biochem. active agents for chem. catalysis and cell receptor activation

Chemicals

reactant-catalyst pair; biochem. active agents for chem. catalysis and cell receptor activation

Pharmaceuticals

Hormones

Ligands

receptor pair; biochem. active agents for chem. catalysis and cell receptor activation

Proteins, biological studies

ribosome; biochem. active agents for chem. catalysis and cell receptor activation

Opioid receptors

strychnine pair; biochem. active agents for chem. catalysis and cell receptor activation

Enzymes

substrate pair; biochem. active agents for chem. catalysis and cell receptor activation

Virus, animal

Epstein-Barr, biochem. active agents for chem. catalysis and cell

receptor activation

Receptors

adrenergic, epinephrine pair; biochem. active agents for chem.

catalysis and cell receptor activation

Lipoprotein receptors

high-d., HDL pair; biochem. active agents for chem. catalysis and

cell receptor activation

Lipoproteins

high-d., HDL receptor pair; biochem. active agents for chem.

catalysis and cell receptor activation

Receptors

high-d. lipoprotein, HDL pair; biochem. active agents for chem.

catalysis and cell receptor activation

Receptors

hormone, hormone pair; biochem. active agents for chem. catalysis

and cell receptor activation

Virus, animal

human immunodeficiency, biochem. active agents for chem.

catalysis and cell receptor activation

Virus, animal

murine lymphotropic, biochem. active agents for chem. catalysis

and cell receptor activation

Receptors

opioid, strychnine pair; biochem. active agents for chem. catalysis

and cell receptor activation

Organic compounds, biological studies

phosphorus-contg., biochem. active agents for chem. catalysis and

cell receptor activation.

9001-99-4

-RNA pair; biochem. active agents for chem. catalysis and cell

receptor activation

9001-63-2

-chitin pair; biochem. active agents for chem. catalysis and cell

receptor activation

1398-61-4

-lysozyme pair; biochem. active agents for chem. catalysis and cell

receptor activation

630-08-0, biological studies

Hb pair; biochem. active agents for chem. catalysis and cell

receptor activation

9032-20-6

NADH pair; biochem. active agents for chem. catalysis and cell

receptor activation

58-68-4

NADH-Q reductase pair; biochem. active agents for chem.

catalysis and cell receptor activation

9000-81-1

acetylcholine pair; biochem. active agents for chem. catalysis and

cell receptor activation

51-84-3, biological studies

acetylcholinesterase pair; biochem. active agents for chem.

catalysis and cell receptor activation

51-43-4

adrenergic receptor pair; biochem. active agents for chem.

catalysis and cell receptor activation

22541-48-6, zinc

1332-29-2

7631-86-9, biological studies

11113-84-1

14567-92-1

50-99-7, uses

63-42-3

69-79-4

99-20-7

453-17-8

9004-54-0, uses
 9005-79-2, uses
 13133-07-8
 biochem. active agents for chem. catalysis and cell receptor activation
 11075-17-5
 carboxy terminal polypeptide pair; biochem. active agents for chem. catalysis and cell receptor activation
 56-45-1, biological studies
 7440-66-6, biological studies
 carboxyl protease pair; biochem. active agents for chem. catalysis and cell receptor activation
 9001-48-3
 glutathione pair; biochem. active agents for chem. catalysis and cell receptor activation
 70-18-8, biological studies
 glutathione-reductase pair; biochem. active agents for chem. catalysis and cell receptor activation
 57-24-9
 glycine receptor pair; biochem. active agents for chem. catalysis and cell receptor activation
 76-99-3
 opiate receptor pair; biochem. active agents for chem. catalysis and cell receptor activation
 73-24-5, diphosphate
 organophosphate compd. pair; biochem. active agents for chem. catalysis and cell receptor activation
 57-50-1, uses
 58-61-7, uses
 59-56-3
 77-92-9, uses
 98-92-0
 110-15-6, uses
 110-17-8, uses
 133-89-1
 154-87-0
 320-77-4
 328-42-7
 528-50-7
 6915-15-7
 8059-24-3
 9004-70-0
 particle surface modified with; biochem. reactive pairs binding to; biochem. active agents for chem. catalysis and cell receptor activation
 9001-92-7
 thiol or carboxy; pair with serine or zinc; biochem. active agents for chem. catalysis and cell receptor activation

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123:85299
 Ultrafine metal particles immobilized on styrene/acrylic acid copolymer particles.
 Tamai, Hisashi; Hamamoto, Shiro; Nishiyama, Fumitaka; Yasuda, Hajime (Department Applied Chemistry, Hiroshima University, Higashihiroshima 724, Japan). J. Colloid Interface Sci., 171(1), 250-3 (English) 1995. CODEN: JCISA5. ISSN: 0021-9797. DOCUMENT
 TYPE: Journal CA Section: 38 (Plastics Fabrication and Uses) Section cross-reference(s): 45, 67
 Ultrafine metal particles immobilized on styrene/acrylic acid copolymer fine particles were produced by reducing the copolymer particles-metal ion complexes or refluxing an ethanol soln. of metal ions in the presence of copolymer particles. The size of metal particles formed by redn. of the complex is smaller than that by reflux of the metal ion soln.

and depends on the amt. of metal ions immobilized.

Keywords

acrylic acid styrene copolymer metal immobilization
hexene hydrogenation catalyst polymer metal

Index Entries

Hydrogenation catalysts
Polymer-supported reagents
catalytic activity of metal particles immobilized on acrylic
acid-styrene copolymer for hydrogenation of hexene
Polymer morphology
ultrafine metal particles immobilized on styrene/acrylic acid
copolymer particles
592-41-6, reactions
catalytic activity of metal particles immobilized on acrylic
acid-styrene copolymer for hydrogenation of hexene
10049-07-7
13820-53-6
7447-39-4, miscellaneous
7646-79-9, miscellaneous
7718-54-9, miscellaneous
7761-88-8, miscellaneous
16941-12-1
9017-42-9
25085-34-1
ultrafine metal particles immobilized on styrene/acrylic acid
copolymer particles

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122:323131

Adsorption of p-ethyltoluene in H-ZSM-5 zeolite behavior in long-term observations.

Zikanova, A.; Derewinski, M. (J. Heyrovsky Inst. Phys. Chem., Academy Sci. Czech Republic, Prague 182 23, Czech Rep.). Zeolites, 15(2), 148-56 (English) 1995. CODEN: ZEOLD3. ISSN: 0144-2449.

DOCUMENT TYPE: Journal CA Section: 66 (Surface Chemistry and Colloids) Section cross-reference(s): 51, 69

Long-term adsorption measurements in the system p-ethyltoluene/H-ZSM 5 zeolite were performed at 303-393 K under const. pressure conditions. The corresponding adsorption isotherms and kinetic data are presented. For temps. > 333 K, adsorption isotherms exhibit irreversible features. Kinetic curves show strong deviations from the behavior described by the 2nd Fick law. The deviations in the initial part of uptake curves suggest an addnl. transport resistance to act in the crystal surface. This is consistent with the parabolic Al concn. profile in the crystals detd. by electron microprobe anal. For long times, another deviation occurs characterized by tailing which becomes more pronounced when adsorbed amt. increases. The latter deviation is discussed in terms of immobilization mechanisms. FTIR anal. suggests that at 363 K, the immobilization by chem. transformation may dominate the sorption kinetics.

Keywords

zeolite ZSM 5 adsorption ethyltoluene kinetics
isomerization catalyst ethyltoluene zeolite ZSM 5
immobilization mechanism transport resistance zeolite adsorption

Index Entries

Adsorption kinetics

Diffusion

Isomerization catalysts

temp. effect on adsorption isotherms and kinetic data for the
p-ethyltoluene/HZSM 5 system and origin of transport
resistance

Adsorption

temp. effect on adsorption isotherms for the p-ethyltoluene/HZSM 5
system and origin of transport resistance

Zeolites, properties

HZSM 5, temp. effect on adsorption isotherms and kinetic data for
the p-ethyltoluene/HZSM 5 system and origin of transport
resistance

7429-90-5, properties

622-96-8

temp. effect on adsorption isotherms and kinetic data for the
p-ethyltoluene/HZSM 5 system and origin of transport
resistance

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122:114081

Disposal of spent FCC catalysts containing antimony and vanadium as
landfill.

Pitts, Frank (Engelhard Corp., USA). Brit. UK Pat. Appl. GB 2277513
A1 2 Nov 1994, 14 pp. (United Kingdom). CODEN: BAXXDU.

CLASS: ICM: A62D003-00. APPLICATION: GB 93-8894 29 Apr

1993. DOCUMENT TYPE: Patent CA Section: 60 (Waste Treatment
and Disposal) Section cross-reference(s): 51

Spent FCC catalyst contaminated with Sb is treated to reduce the
leachability of Sb, as well as V and other metals, rendering it suitable
for disposal as landfill. The treatment involves adding Ti sulfate or Al
sulfate, and Fe sulfates when leachability of V is also to be minimized.
The salt-treated mixt. is neutralized with lime and dried.

Keywords

antimony vanadium immobilization waste
FCC catalyst waste landfill

Index Entries

Slags

acid digestion product; disposal of spent FCC catalysts contg.
antimony and vanadium as landfill

Lime (chemical)

disposal of spent FCC catalysts contg. antimony and vanadium as
landfill

Cracking catalysts

Petroleum refining catalysts

spent; disposal of spent FCC catalysts contg. antimony and
vanadium as landfill

Waste solids

landfill, disposal of spent FCC catalysts contg. antimony and
vanadium as landfill

1318-16-7, uses

12168-52-4

acid digestion product; disposal of spent FCC catalysts contg.
antimony and vanadium as landfill

7720-78-7

10028-22-5

10043-01-3

18130-44-4

7440-36-0, processes

7440-62-2, processes

disposal of spent FCC catalysts contg. antimony and vanadium as landfill

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122:82594

Immobilization of metalloporphyrins in electropolymerized films: design and applications.

Bedioui, Fethi; Devynck, Jacques; Bied-Charreton, Claude
(Laboratoire de Electrochimie et de Chimie Analytique, Ecole Nationale Supérieure de Chimie de Paris, Paris 75231, Fr.). Acc. Chem. Res., 28(1), 30-6 (English) 1995. CODEN: ACHRE4. ISSN: 0001-4842.
DOCUMENT TYPE: Journal; General Review CA Section: 37 (Plastics Manufacture and Processing) Section cross-reference(s): 6, 9
A review with 102 refs. Electropolymerized metalloporphyrin films show promise as biomimetic catalysts and as anal. tools for biosensing.

Keywords

metalloporphyrin electropolymerized film review
biomimetic catalyst metalloporphyrin film review
biosensing tool metalloporphyrin film review

Index Entries

Catalysts and Catalysis
biomimetic; electropolymerized metalloporphyrin films as biomimetic catalysts and anal. tools for biosensing
Biosensors
Polymers, uses
electropolymerized metalloporphyrin films as biomimetic catalysts and anal. tools for biosensing
Porphyrins
metal complexes, electropolymerized metalloporphyrin films as biomimetic catalysts and anal. tools for biosensing

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120:192013

Immobilization of organometallic compounds on polymer matrixes containing olefinic groups: properties and catalytic activity.
Bronstein, L. M.; Valetskii, P. M. (Nesmeyanov Inst. Organoelem. Compds., Moscow 117813, Russia). Vysokomol. Soedin., Ser. A Ser. B, 35(11), 1878-82 (Russian) 1993. CODEN: VSSBEE. DOCUMENT TYPE: Journal; General Review CA Section: 30 (Terpenes and Terpenoids) Section cross-reference(s): 35
A review section on the synthesis of linear organometallic polymers was followed by catalytic data. Hydrogenation of dehydrolinalool to linalool was accomplished with up to 98.7% selectivity using a polymer-bound Pd catalyst supported on alumina. Hydrogenation of pseudoionone and dehydrophytone to the saturated ketones was accomplished with 99.5 and 99.3% yields, resp., using alumina-supported polymer-bound Rh catalyst.

Keywords

review organometallic polymer
polymer supported palladium rhodium hydrogenation catalyst
alkynyl aldehyde hydrogenation
unsaturated ketone hydrogenation

Index Entries

Hydrogenation catalysts
Polymer-supported reagents

alumina-supported polymer-bound palladium and rhodium
hydrogenation catalysts for alkynyl alcs. and unsatd.
ketones
Alcohols, reactions
alkynyl, alumina-supported polymer-bound palladium and rhodium
hydrogenation catalysts for alkynyl alcs. and unsatd.
ketones
1604-35-9
3689-69-8
7440-05-3, polymer-bound
7440-16-6, polymer-bound
29171-20-8
29171-23-1
110-86-1, uses
141-10-6
1344-28-1, uses
alumina-supported polymer-bound palladium and rhodium
hydrogenation catalysts for alkynyl alcs. and unsatd.
ketones
78-70-6
502-69-2
1604-34-8
33185-23-8
60046-87-9
prepn.; alumina-supported polymer-bound palladium and rhodium
hydrogenation catalysts for alkynyl alcs. and unsatd.
ketones

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119:19521

Column packing for detection of chemiluminescence and its use in
detn. of hydrogen peroxide.

Wakabayashi, Yasuto; Tokieda, Tsunemi; Moriguchi, Soyao (Showa
Denko Kk, Japan). Jpn. Kokai Tokkyo Koho JP 05034330 A2 9 Feb
1993 Heisei, 6 pp. (Japan). CODEN: JKXXAF. CLASS: ICM:
G01N030-48. ICS: B01J020-26; G01N021-78. APPLICATION: JP
91-190133 30 Jul 1991. DOCUMENT TYPE: Patent CA Section: 79
(Inorganic Analytical Chemistry)

The title column packing is characterized in that luminol or its deriv. is
immobilized on a polymer by covalent bonds. In the detn. of H₂O₂ or
chemiluminescence catalyst by chemiluminescence source detection
using HPLC, the above column packing is filled in a flow cell. The app.
is simple and there is no waste of reagents, no background fluctuation
and noise level can be lowered. A sharp chromatogram can be
obtained.

Keywords

luminol immobilized polymer column packing HPLC
hydrogen peroxide detn HPLC column packing
chemiluminescent catalyst column packing flow cell

Index Entries

Chromatographs, column and liquid
columns, luminol or its deriv.-immobilized org. polymer as column
packing for, in hydrogen peroxide detn.
7722-84-1, analysis
detn. of, with luminol-immobilized org. polymer as column packing
in HPLC by chemiluminescence detn.
521-31-3
3682-14-2
immobilization of, on org. polymer, for column packing for HPLC
hydrogen peroxide detn. by chemiluminescence detn.

31743-77-8

luminol immobilized on, as column packing for HPLC detn. of hydrogen peroxide

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118:45052

Textile for microorganism attachment or as catalytic material for wastewater treatment.

Kesch, Friedhard (Langendorf, Wilhelm, GmbH, Germany). Ger. DE

4125319 C1 16 Jul 1992, 5 pp. (Germany). CODEN: GWXXAW.

CLASS: ICM: C02F003-10. ICS: C02F003-28. APPLICATION: DE

91-4125319 31 Jul 1991. DOCUMENT TYPE: Patent CA Section: 60

(Waste Treatment and Disposal)

The textile (approx. 1 m ´ 1 m) is a weave of microorganism-attachement strips or catalytic (e.g., oxidative) strips with stabilizing strips, where the strips are fastened together with loops at the top and weighted at the bottom or fixed at the bottom. The textile is hung vertically in the treatment tank.

Keywords

aerobic anaerobic wastewater treatment fabric
oxidn catalyst fabric wastewater treatment

Index Entries

Wastewater treatment

aerobic-anaerobic, fabric for microorganism immobilization in
Textiles

woven, for aerobic-anaerobic and/or catalytic oxidn. wastewater
treatment

Wastewater treatment

oxidn., catalytic, fabric for

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117:244664

Progress in the design of selectors for buckminsterfullerene.

Welch, Christopher J.; Pirkle, William H. (Sch. Chem. Sci., Univ. Illinois, Urbana, IL 61801, USA). J. Chromatogr., 609(1-2), 89-101 (English)

1992. CODEN: JOCRAM. ISSN: 0021-9673. DOCUMENT TYPE:

Journal CA Section: 79 (Inorganic Analytical Chemistry) Section

cross-reference(s): 21, 80

The chromatog. retentions of buckminsterfullerene (C60), the related C70 carbon cluster, and several polycyclic arom. hydrocarbons are evaluated using ten high-performance liq. chromatog. stationary phases, including several stationary phases designed specifically for recognition of the fullerenes. All of the stationary phases examd. provide some degree of retention and selectivity in the sepn. of C60 and C70. A novel tripodal p-acidic stationary phase designed for simultaneous multipoint interaction with buckminsterfullerene provides the greatest retention and the greatest sepn. factor for the C60-C70 mixt.

Keywords

selector stationary phase buckminsterfullerene HPLC
fullerene HPLC selector stationary phase
liq chromatog stationary phase fullerene selector

Index Entries

Hydrosilylation catalysts
chloroplatinic acid as
Fullerenes

sepn. of arom. hydrocarbons and, by HPLC, stationary phases for
Chromatography, column and liquid
high-performance, stationary phases, for arom. hydrocarbons and
fullerenes
Aromatic hydrocarbons, analysis
polycyclic, sepn. of fullerenes and, by HPLC, stationary phases for
Silica gel, compounds
reaction products, with dinitrobenzene derivs., as HPLC stationary
phases for arom. hydrocarbons and fullerenes
99-33-2
acylation by, in presence of triethylamine
56-40-6, analysis
acylation of, by dinitrobenzoyl chloride
121-44-8, uses
as condensation reagent for dinitrobenzene halo derivs.
16941-12-1
as hydrosilylation catalyst
70-34-8
condensation of, with allylamine and long-chain triol
1066-35-9
dinitrobenzene deriv. hydrosilylation by
112-43-6
esterification of, with dinitrobenzoyl chloride
16357-59-8
in coupling of (dinitrobenzamido)glycine with
aminobutyldimethylmethoxysilane
144563-62-2
prepn. and condensation of, with dinitrobenzene derivs.
16533-70-3
prepn. and coupling of, with aminobutyldimethylmethoxysilane
7403-39-6
142450-98-4
144563-63-3
144563-65-5
prepn. and hydrosilylation of
144563-58-6
144563-59-7
144563-60-0
144563-61-1
144563-64-4
144563-66-6
prepn. and immobilization of, on silica gel
107-11-9
reaction of, with dinitrofluorobenzene
112-45-8
reaction of, with formaldehyde
50-00-0, reactions
reaction of, with undecenyl aldehyde
3663-43-2
reactions of, with dinitrobenzoyl chloride and
(dinitrobenzamido)glycine
64-17-5, reactions
reactions of, with hydrosilylated dinitrobenzene derivs.
71-43-2, analysis
85-01-8, analysis
91-20-3, analysis
92-52-4, analysis
120-12-7, analysis
129-00-0, analysis
218-01-9
56-55-3
99685-96-8
115383-22-7
sepn. of, from fullerenes and arom. hydrocarbons by HPLC,
stationary phases for

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117:153824

Preparation of surface-functionalized inorganic supports with active hydroxyl groups.

Erlar, Ulrich; Heublein, Guenther; Heublein, Brigitte
(Friedrich-Schiller-Universitaet, Germany). Ger. (East) DD 296852 A5
19 Dec 1991, 4 pp. (German Democratic Republic). CODEN:
GEXXA8. CLASS: ICM: B01J020-10. ICS: B01J020-26;
B01J020-32. APPLICATION: DD 89-325778 15 Feb 1989.
DOCUMENT TYPE: Patent CA Section: 48 (Unit Operations and
Processes)

The surfaces of inorg. supports from silicic acid, glass, Al₂O₃, CaO, TiO₂, or spherical polysilicic acid particles are functionalized by adsorbing epoxidized polydienes (e.g., polybutadiene) on the supports followed by thermal treatment. Then the treated supports are contacted with reactive org. compds. including amines, carboxylic acids, or amino acids at 20-200°. In particular, the org. compds. are 1,1'-carbonyldiimidazole, p-toluenesulfonylchloride, N-hydroxysuccinimidylchloroformate, and p-nitrophenylchloroformate. The treated support is stable under pressure and deformation forces and is resistant to biol. degrdn. The supports are useful as separators, ion exchangers, catalyst supports, and supports for immobilization of biol. materials.

Keywords

carrier inorg functionalized
support inorg functionalized
ion exchanger support functionalized
catalyst support functionalized
biol material support

Index Entries

Ion exchangers
Separators
functionalized inorg. supports for, contg. free hydroxyl groups
Catalysts and Catalysis
Chromatography
supports, inorg., surface-treated for free hydroxyl groups
9003-99-0
immobilization of, surface-functionalized supports for
98-59-9, reaction products with epoxidized polydienes and inorg.
supports
530-62-1, reaction products with epoxidized polydienes and inorg.
supports
1305-78-8, reaction products with epoxidized polydienes and amines
and org. acids
1343-98-2, epoxidized, reaction products with amines and org. acids
and inorg. supports
1344-28-1, reaction products with epoxidized polydienes and amines
and org. acids
7631-86-9, reaction products with epoxidized polydienes and amines
and org. acids
7693-46-1, reaction products with epoxidized polydienes and inorg.
supports
13463-67-7, reaction products with epoxidized polydienes and amines
and org. acids
15149-73-2, reaction products with epoxidized polydienes and inorg.
supports
reaction products with epoxidized polydienes and amines and org.
acids
9003-17-2, epoxidized, reaction products with amines and org. acids

and inorg. supports
surface-functionalized supports, contg. free hydroxyl groups

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116:182414

Methods for preparing immobilized chiral rhodium(I) complexes.
Selke, Ruediger; Capka, Martin; Doeblner, Christian; Kreuzfeld, Hans
Joern; Krause, Hanswalter (Akademie der Wissenschaften der DDR,
Ger. Dem. Rep.). Ger. (East) DD 280474 A1 11 Jul 1990, 5 pp.
(German Democratic Republic). CODEN: GEXXA8. CLASS: ICM:
B01J031-18. ICS: B01J032-00; C07F015-00. APPLICATION: DD
89-326688 17 Mar 1989. DOCUMENT TYPE: Patent CA Section: 67
(Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 78
Methods for prepg. immobilized complexes described by the general
formula $T-X-C_6H_4SO_3-[Rh(Z)(Lk)]^+$ (T = an inorg. support; X = a binding
chain extending between the support and the aryl group of an
arylsulfonic acid; Z = a chiral chelating ligand having 2 trivalent P atoms
capable of bonding with the Rh; L = an olefin, a diolefin, an alc., or a
solvent mol.; and k = 0-3) entail combining a modified support
(described by the general formula $T-X-C_6H_4SO_3-Y^+$, where Y^+ is a
cation) suspended in a solvent with a sol. complex having the general
formula $[Rh(Z)(Lk)]^+A^-$ (A^- = the anion of a weakly conjugating acid at
0-50° to produce the immobilized complex. The complex may be
formed in situ. The Y^+ cation is H^+ , Li^+ , Na^+ , K^+ , or NR_4^+ (R = the same
or different substituents selected from H, alkyl, aralkyl, aryl, hydroxyalkyl,
or methoxyalkyl groups). The A^- anion may be BF_4^- , ClO_4^- , SO_4H^- ,
 PF_6^- , Cl^- , R_1-COO^- , or $R_1-SO_3^-$, where R_1 is an alkyl or aryl group. Use
of the materials as enantiomer-selective catalysts is indicated.

Keywords

immobilized chiral rhodium complex prepn
stereoselective catalyst immobilized rhodium complex

Index Entries

Silica gel, miscellaneous
modified, chiral rhodium complex salts immobilized on, prepn. of
Catalysts and Catalysis
stereoselective, immobilized chiral rhodium complexes, prepn. of
67-56-1, uses
71-43-2, uses
108-88-3, uses
109-99-9, uses
123-91-1, uses
in immobilized chiral rhodium complex prepn.
137820-21-4
prepn. and immobilization of
137820-21-4, salts with modified silica gel
prepn. of immobilized
12307-16-3
32305-98-9
35138-22-8
60333-76-8
61478-28-2
120094-03-3
reaction of, in immobilized rhodium complex prepn.

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116:165034

Synthesis, structure determination and immobilization of some
dirhodium complexes with chiral binding thiolato ligands.

Investigation of their catalytic activity for enantioselective hydrogenation.

Eisen, Moris; Weitz, Pnina; Shtelzer, Sarah; Blum, Jochanan; Schumann, Herbert; Gorella, Boris; Goerlitz, Frank H. (Dep. Org. Chem., Hebrew Univ., Jerusalem 91904, Israel). Inorg. Chim. Acta, 188(2), 167-76 (English) 1991. CODEN: ICHAA3. ISSN: 0020-1693. DOCUMENT TYPE: Journal CA Section: 78 (Inorganic Chemicals and Reactions) Section cross-reference(s): 67, 75
 $[(CMe_3)_3P(CO)Rh]_2(m-Cl)(m-L)$ (I; HL = m-6,6-dimethylbicyclo[3.1.1]heptane-2-methanethiol-S:S), m-5b-methyl-2a-(1-methylethyl)cyclohexanethiol-S:S) were prep'd. from $[Rh(CO)_2]_2(m-Cl)_2$, $P(CMe_3)_3$ and the corresponding sulfides (-)-cis-myrtanethio)trimethylsilane and (+)-(neomenthanethio)trimethylsilane. The mol. structures of I were det'd. by single crystal x-ray diffraction (C2221, a 13.749(4), b 23.509(9), c 27.271(9) Å, Z = 8, R = 0.0443, Rw = 0.0491; P1, a 16.209(6), b 14.150(5), c 9.899(3) Å, Z = 2, R = 0.058, Rw = 0.094), resp. The latter was found to exist in the crystal as a pair of 1R,2R,5S- and 1S,2R,5S-epimers. Both chiral complexes have been immobilized by attachment to divinylbenzene-crosslinked polystyrene resins. Application of the chiral dirhodium complexes as catalysts for hydrogenation of Me a-acetamidocinnamate revealed that while cyclohexanethiol-based complex leads to optically active N-acetylphenylalanine Me ester (up to 50% ee) the other gives only the racemic product. The immobilization of the complexes improved the enantioselectivity of the bicyclic-ligand complex but decreases the ability of cyclohexanethiol-based complex to induce asym. redn.

Keywords

crystal structure rhodium chiral cyclohexanethiolato
 bicycloheptylmethanethiolato
 catalyst hydrogenation enantioselective rhodium
 bicycloheptylmethanethiolato cyclohexanethiolato
 rhodium bicycloheptylmethanethiolato cyclohexanethiolato prep'n
 catalysis
 thiolato cyclohexane bicycloheptylmethane rhodium complex

Index Entries

Crystal structure
 Molecular structure
 of rhodium chiral methylisopropylcyclohexanethiolato and
 bicycloheptylmethanethiolato complexes
 Solvent effect
 on stereoselective hydrogenation of acetamidocinnamate by
 rhodium carbonyl chloro
 methyl(methylethyl)cyclohexanethiolato or
 bicycloheptylmethanethiolato complexes with and without
 polymer supports
 Hydrogenation catalysts
 rhodium carbonyl chloro methyl(methylethyl)cyclohexanethiolato and
 bicycloheptylmethanethiolato complexes with and without
 polymer supports as, for alkenes
 Hydrogenation catalysts
 stereoselective, rhodium carbonyl chloro
 methyl(methylethyl)cyclohexanethiolato tributylphosphine
 complex as, for acetamidocinnamate
 51152-12-6
 condensation reaction of, with methanesulfonyl chloride followed by
 cesium thioacetate and redn., myrtanethiol by
 60676-51-9
 hydrogenation of, in presence of rhodium carbonyl chloro
 complexes with methyl(methylethyl)cyclohexanethiolate or
 bicycloheptylmethanethiolate with and without copolymer

support, stereoselectivity in
 138972-16-4
 prepn. and crystal structure and hydrogenation of alkenes in
 presence of
 139685-21-5
 prepn. and crystal structure of
 139889-73-9, trimethylsilyl-modified polystyrene-divinylbenzene
 copolymer complex with
 prepn. and hydrogenation of acetamidocinnamate in presence of
 138972-15-3
 prepn. and mol. structure and hydrogenation of alkenes in presence
 of
 139092-16-3
 prepn. and reaction of, with cesium thioacetate followed by redn.,
 myrtanethiol by
 141052-47-3
 prepn. and reaction of, with chlorotrimethylsilane
 139165-46-1
 prepn. and redn. of
 9003-70-7, diphenylphosphine-modified complex with rhodium
 carbonyl chloro tributylphosphine
 methyl(methylethyl)cyclohexanethiolato or
 dimethylbicycloheptylmethanethiolato
 136400-96-9
 136451-47-3
 138972-16-4, diphenylphosphine-modified polystyrene-divinylbenzene
 copolymer product with
 139092-15-2
 139113-31-8
 139685-21-5, diphenylphosphine-modified polystyrene-divinylbenzene
 copolymer product with
 prepn. of
 3618-96-0
 prepn. of, by hydrogenation of acetamidocinnamate by rhodium
 carbonyl chloro methyl(methylethyl)cyclohexanethiolato or
 bicycloheptylmethanethiolato complexes with and without
 copolymer supports
 14523-22-9
 reaction of, with tributylphosphine and myrtanylthiosilane or
 neomenthanethiotrimethylsilane or
 neomenthyldiphenylphosphine

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116:114271
 Metal cluster catalysts and their immobilization function.
 Kaneda, Kiyotomi; Imanaka, Toshinobu (Osaka Univ., Osaka, Japan).
 Hyomen, 29(10), 793-806 (Japanese) 1991. CODEN: HYMN7.
 ISSN: 0367-648X. DOCUMENT TYPE: Journal; General Review CA
 Section: 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction
 Mechanisms)
 A review with 59 refs.

Keywords

review metal cluster catalyst

Index Entries

Catalysts and Catalysis
 metal cluster
 Clusters
 metallic, for catalysts